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MIGRAINE.[1]

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I FEEL that I may well begin this paper by a few words of apology that I, a worker in one small branch of medicine, should address you on a subject as complicated as migraine, in which eye symptoms play only a small part. My excuse for doing so is that as an oculist I see very many patients in whom headaches are a prominent symptom, and of these the sufferers from migraine form a considerable percentage.

The subject is therefore one of great interest to me, and though some of you may hold that the job of the oculist is to examine, treat, and report on the eyes only, in practice I find it very desirable to try to form a diagnosis, both for my own satisfaction, for that of the patient, and for the physician referring him, even though my treatment goes no further than I have indicated.

I hope that the subject of migraine is also of general interest to you by reason of the fact that I think just about every branch of medicine or surgery, orthopædics excepted, has some point of contact at times in the diagnosis or treatment of patients suffering from this symptom complex. It is also, unfortunately, a subject of very close interest to many of our profession who are themselves sufferers.

I have little that is new to put before you tonight; nor have I made any attempt at an analysis of my own cases, because this has been done by many with much larger numbers of cases to analyse, and because an oculist is not in the best position fully to investigate such cases.

Although I shall here and there quote from my own case notes, and even indulge in a little speculation of my own, the bulk of what follows has been compiled from recent medical literature on the subject.

[1] Read at a meeting of the South Australian Branch of the British Medical Association on March 29, 1934.

Historical.

Although the subject of headache played a prominent part in the earliest medical writings, it was not until the first century of Christianity that Aretæus, of Coppodocea, left a description of a disease which he called heterocrania, which is recognizable by us as migraine. Prior to this no attempt seems to have been made to differentiate one form of headache from another, and Aretæus probably included many conditions which we would classify otherwise. Nevertheless it was a beginning, and fifty years later Galen described the same condition, for which he coined the word hemicrania.

During subsequent centuries this term became abbreviated through the forms of emigranea, migranea and migrana, from which latter the French word migraine has scarcely altered.

In English literature the term mygrame appeared in 1398, and can be traced down the centuries as myegrym and mygrim, and finally migrim in 1713; this last has remained down to modern times, though the French form migraine came also into use in 1777 and is now the accepted standard usage among English speaking peoples.

In the earliest writings little or no curiosity seems to have been felt as to the ætiology of the condition; various fluids and vapours were supposed to fly to the head and there to do their nefarious work. In tracing the beginning of modern scientific study of migraine, mention may be made of Lepois, himself a sufferer, who in 1618 described his symptoms in great detail, while early in the eighteenth century Anhalt and Wepfer put forward theories in which distension of the cerebral vessels, blood stasis *et cetera* played the principal part.

In the latter half of last century attention was directed to the rôle of the vasomotor system. Bernard in 1858 published the result of experimental stimulation of the superior cervical sympathetic ganglion in the production of angiospasm. Later, in 1887, Jaccoud and Eulenburg described two separate effects, an angiospastic and an angioparalytic, in the production of symptoms.

Other writers whose names deserve mention were Tissot, Thomas and Liveing, who did much to stimulate interest in the subject, and in whose wake have come a host of scientific investigators, now equipped with advances in our knowledge of neuro-anatomy, physiology and biochemistry *et cetera* which have given a new impetus to research into the basic causes of migraine and the mechanism of the attacks. Further allusion to these investigations will be made in another part of this paper.

Definition.

H. A. Riley,[1] in the *Bulletin of the Neurological Institute of New York*, 1932, defines migraine as a "periodic incapacitating headache, culminating in nausea or vomiting, often preceded by visual disturbance and followed by sleep, and occurring against a background of relatively perfect health". He goes on to say that this definition is not absolute, since many cases fail to present any one or more of these characteristics, and yet must be regarded as migraine.

Textbook descriptions lay stress on the triad of intermittent headache with visual symptoms and vomiting—the sick-headache. Critchley and Ferguson[2] point out that any two of the classical symptoms may be absent, and though this may throw doubt on the validity of the diagnosis, this may usually be determined by a careful consideration of other criteria, the personal and family history, the nature of the symptoms in, and the periodicity of other attacks *et cetera*.

We may also include in our definition the distinction between idiopathic and symptomatic migraine, the latter term including all cases in which the symptoms depend on some organic disease, usually some intracranial condition such as tumour, aneurysm *et cetera*, but inclusive of renal disease, arteriosclerosis *et cetera*.

My paper is concerned mainly with the so-called idiopathic variety.

Incidence.

The percentage of sufferers from migraine among the general population is difficult to estimate. Figures as low as 1% and as high as 25% have been suggested.

Workers in the country and manual labourers seem definitely less subject to attacks than city dwellers, and especially those whose work is chiefly mental.

Allen in 1932 investigated a group of physicians and their wives, and found that 54% of males and 53% of females were subject to migraine, characterized by one-sided headache, positive family history and scintillating scotoma. These figures are so high that they cannot be believed to represent the incidence of migraine even among our profession; but if they are to be relied on at all, they bring out one point, namely the equal incidence between the sexes, which most observers have found to vary between one to two and one to five, males to females. This unequal incidence has been questioned, notably by Gowers and Crookshank.

Regarding the periodicity of the attacks, there is no hard and fast rule. Many women have attacks only or mainly with menstruation. Others, both sexes, may have attacks at fairly regular intervals of two to three days a week, or longer, but the majority of cases have no such periodicity, the attacks coming at quite irregular intervals.

In a few cases the attacks are at such frequent intervals as to constitute what may be termed a "*status hemicranius*".

Regarding the age of onset, attacks may commence in childhood or be delayed to beyond middle age, but in the great majority of cases the symptoms begin in youth or early adult life. Moreover, migraine may cease in middle age and appear again in later years; in such cases vascular degeneration should be suspected as a cause.

Heredity.

Allen collected statistics of 153 male and 392 female sufferers from migraine, and found that in 51% the mother had had the same condition, in 19% the father had been afflicted with headaches, and in 22% both parents had been sufferers. In

only 8% of the cases was there no hereditary tendency to the condition.

Flatau's figures were rather similar. He found that migraine was inherited from the maternal side four times as often as from the paternal.

An investigation by Moloney showed that allergy was about four times as frequent in the families of patients suffering from migraine as in a control group, while migraine was three times as common in the families of allergic patients as in controls.

Other investigations suggest, if they do not prove, that there is a parallelism in the incidence of migraine and idiopathic epilepsy in the same families.

These facts strongly suggest that in some individuals there is an inborn tendency for these disorders to occur, and that without this inheritance migraine is uncommon.

Symptomatology.

In view of the rather widely held idea of migraine as a series of headaches confined to one side, and associated in a large proportion of cases with visual symptoms and vomiting, it may be permissible, before considering the symptoms in greater detail, to emphasize the fact that any part of the nervous system may come into the picture. Thus after a prodromal period, by no means always present, we find symptoms involving any of the special senses, any part of the brain, or the motor, sensory and vegetative nervous system.

One must be struck by the similarity of epilepsy, the auræ of which may be very like some of the symptoms of migraine while the main feature of epilepsy, the motor discharge, may figure inconstantly and in a minor rôle as one of the symptoms of migraine.

Prodromal symptoms are usually not very obvious, but occur as loss of sense of well being, irritability, somnolence *et cetera*. They are replaced by the symptoms of the attack itself.

Headache, the commonest symptom, must be given pride of place. It may be so severe as to incapacitate the sufferer completely, or it may be mild; it may be generalized or it may be localized to one side, or to the front or the back, or it may shift in position during an attack or in different attacks. It may be described as a pressure or a boring pain, or as a throbbing or hammering or a feeling of expansion or bursting. It may have neuralgic characters involving the trigeminal or occipital nerves or extend to involve the neck and upper extremity. Lastly, it may be entirely absent.

During pregnancy the tendency is for the headaches to be in abeyance, though vomiting at these times is likely to be excessive.

The headaches, together with the other symptoms, tend to disappear after middle age in a majority of cases.

The Special Senses. Symptoms involving the special senses may precede the headaches. Visual phenomena are easily the commonest, and, when they are severe, the condition is regarded as ophthalmic migraine, one of the several special types to be mentioned later; but, short of this, many attacks are attended by the sensation of points of light scattered throughout the visual fields, or momentary obscurations of vision.

CASE I. A woman, now forty years old, commenced migrainous headaches at the age of five years, the longest interval between attacks being five weeks. Between the ages of fourteen and fifteen years she had a number of attacks of "blindness", which lasted only a short while and were not succeeded by headache. It would appear that the "blind" turns took the place of the usual headache, and apart from these episodes she has never had visual symptoms.

There may be hallucinations of sight or of hearing; tinnitus or vertigo may be experienced, or sensations of taste or smell. These are all suggestive of irritation of the cerebral cortex.

Motor Nervous System. Though infrequent, affection of the motor nervous system may show itself by localized twitchings or myoclonic spasms, usually of the face, arms and hands, less frequently of the legs. Hemiplegia or hemiparesis may occur, but a monoplegia is more common, and then in the arm more often than the leg. One limb may be affected after another, and the paresis may pass from one to the other side, or even affect both sides simultaneously. Other symptoms which may develop are aphasia or agraphia.

Any of these symptoms, if they occur, are usually transient, and would seem to be definitely cortical in origin, and when the distribution is hemiplegic the headache is usually contralateral.

Sensation. Some affection of sensation is very common, and most patients with severe migraine experience it to some degree. Numbness or tingling may appear, usually in the face, lips, tongue or finger-tips. The paræsthesia may be accompanied by hypæsthesia, and Gowers has noted that it may begin in the fingers and, travelling as a slow wave up the arm, reach the shoulder in about fifteen minutes, often accompanied by a weakness of the limb. Here again the headache is usually contralateral.

Vegetative Nervous System. Vomiting or nausea is one of the commonest symptoms of all attacks, so that the lay term of "sick headache" is a fairly accurate description of a large percentage of cases. It usually occurs at about the height of the headache, which it may or may not relieve. It is usually accompanied by salivation or sweating.

An attempt has been made to differentiate two types of reaction of the vasomotor system: (i) an angiospastic or vaso-constrictor or "white" type, with pale face, salivation and dilated pupils; (ii) an angioparalytic or vaso-dilator or "red" type, with flushed face, contracted pupils, ptosis and general perspiration. Mixed forms occur, however, and no assistance is given as regards the question of whether the mechanism of the actual symptoms is by way of dilatation or contraction of the cerebral vessels.

Other symptoms attributable to the vegetative nervous system are angioneurotic œdema, dermographia, swellings of mucous membranes, hæmorrhages into the skin or retina, lachrymation from one or both eyes, and diarrhœa.

Cardiac symptoms such as palpitation or anginal pain may occur, and respiratory affection may be evidenced by air-hunger, dypsnœa or definite asthmatic attacks.

In the renal system there may be albuminuria, increased or decreased secretion of urine, or irritability of the bladder.

Lastly there may be definite raising or lowering of the body temperature; the former may be sufficiently marked to cause a doubt as to the diagnosis when taken into account with other unusual symptoms.

The Cerebellum. The cerebellum is believed to be involved in certain cases in which there is disturbance of equilibrium severe enough to make standing or locomotion impossible, with incoordination in the production of succession movements (asynergia) and marked nystagmus. The headache in such cases is usually occipital.

The Frontal Lobes. Implication of the frontal lobes is shown by lessened psychic activity, loss of memory of names *et cetera*, and incoherence in ideas during an attack, or dreams preceding or following an attack.

The Termination of an Attack. The termination of an attack may be rapid or otherwise, often with an increase of symptoms referable to the vegetative nervous system, such as an increase in the secretion of urine or intestinal peristalsis *et cetera*. Many attacks terminate by the patient falling asleep to wake with the headache completely gone, and there are many patients who get no relief from their pain until sleep or drowsiness supervenes.

Duration. Attacks vary much in duration, fifteen minutes to ten days being perhaps about the extremes, but an average duration is about twelve hours. One investigation carried out on a series of patients showed that in males, 87% lasted less than one day, 4·4% more than three days. In females, 67% lasted less than one day, 18·6% more than three days.

If these figures are a fair sample, they would no doubt help to explain the higher incidence rate in women which has been found by many investigators, for the greater severity in females would necessitate a higher proportion of them seeking relief, and so coming under observation.

Sequelæ.

Most attacks pass off and leave no sign, but occasionally permanent sequelæ are noted. These have been attributed to permanent changes in the vascular supply of part of the central nervous system, usually that part from which the predominant symptoms arise. In this connexion thrombosis of the central retinal artery has been reported on a number of occasions, and palsy of an ocular muscle or a permanent defect in the visual field *et cetera* has been noted.

Types of Migraine.

If we are to regard migraine as a very complex entity, which I think is necessary if we are ever to arrive at an understanding of the underlying cause, it rather tends to cloud the issue to divide it up into separate types.

At the same time, it undoubtedly helps us to recognize and perhaps to treat the condition, and from this point of view, that is, as an aid to diagnosis and treatment, such a subdivision is justified.

Common Migraine or Migraine Simplex.

Common migraine or migraine simplex comprises a majority of all cases, and occurs without any special localizing signs as a severe attack of headache, with mild nausea or vomiting, recurring with or without a regular periodicity. It usually lasts a number of hours, responds as a rule to medication, and is not followed by sequelæ.

Ophthalmic Migraine.

Ophthalmic migraine, one of the classical types, constitutes about 10% of all cases, and is characterized by the appearance of subjective visual symptoms, often of an alarming nature.

Part or the whole of the visual field of one or both eyes is affected, and the attack follows any of the prodromata already described.

Partial obscuration of vision or a cloud effect may be followed by the appearance of a dark or coloured or bright object, fixed or moving, and usually expanding, accompanied by all sorts and combinations of light and colour in moving or shimmering or darting patterns. One of the most characteristic is the fortification spectra, so called from its shape, bounded by zig-zag lines. With this there is a scotoma, relative or absolute, of part of the visual field, the scintillating scotoma. There may be a scotoma without any play of lights or colours, or this simple scotoma may precede or follow the scintillating scotoma. These visual symptoms usually subside as the headache makes its appearance, but they may outlast the headache and even leave a permanent scotoma.

CASE II. A young woman was seen one morning with an homonymous hemianopia, which had come on with a headache the previous day. She was subject to migrainous headaches, but had not before had more than very mild visual symptoms. The hemianopia had then outlasted the headache by about twelve hours, and she described objects as being cut in half, but by the afternoon her visual fields had returned to normal.

The homonymous distribution is the rule, but cases are described in which one eye only is affected. This point is one of great interest, for a monocular affection obviously arises from some prechiasmal interference, probably retinal, while the more common homonymous distribution is as obviously post-chiasmal, and is believed to be usually cortical. I have come across only one allusion to a bitemporal scotoma or hemianopia, which is significant in view of the pituitary origin of migraine which has been put forward, bitemporal hemianopia being one of the commonest of the field defects which occur in cases of pituitary tumour.

Some patients go on experiencing these scintillating scotomata for many years without any associated headaches, and this must be borne in mind when a patient describes seeing lights or spots before the eyes, such symptoms being frequently regarded as due to *muscæ volitantes* or "liverishness".

Ophthalmoplegic Migraine.

In the cases falling under the head of ophthalmic migraine the characteristic feature is an ocular palsy, usually of the third nerve, recurrent or permanent, but sometimes not appearing till migraine has been established for years. The palsy usually,

but not always, recovers in a short while. Riley, from the literature, records that in all cases of ophthalmoplegic migraine which had come to autopsy there was a definite organic lesion of the third nerve or the region of its nucleus. This fact throws considerable doubt on the justification of including ophthalmoplegic migraine among the types of idiopathic migraine, and suggests that the occurrence of an ocular palsy with headaches should arouse the suspicion of organic intracranial disease. The pathological specimen shown this evening of an aneurysm of the posterior communicating artery causing pressure on the third nerve, exemplifies this point.

Facioplegic Migraine.

Facioplegic migraine or facial palsy with migraine is even more open to doubt than the last. In some of the reported cases the pain has been similar to that which frequently accompanies an ordinary facial palsy, while others could be explained by a simple facial palsy occurring in a migrainous subject.

Cerebral Migraine.

The term cerebral migraine is used to describe attacks in which very severe headache is the main feature, especially if persistently localized. Such cases should arouse the suspicion of definite organic cerebral disease, notably of tumour or intracranial aneurysm. A case of this latter condition, reported by me last year, may be cited as an example.[3]

According to Adie, variation in the site of the pain may be taken as a strong argument against such organic disease.

Allergic Migraine.

Under the term allergic migraine have been described cases in which migrainous attacks alternate with attacks which are definitely allergic in origin; for example, asthma or angioneurotic œdema. In view, however, of the fact that allergy is invoked to explain migraine as a whole, it seems of very doubtful value to group together under this head a portion only of such cases.

Abdominal or Bilious Migraine.

By the term abdominal or bilious migraine we should understand a group of cases in which severe vomiting, often accompanied by abdominal pain, is the main feature. Headache may be slight or absent, and consequently great difficulty may arise in diagnosis, the clue to which may be forthcoming only by a careful study of the patient's family and personal history.

Under the title of bilious migraine, an article appeared in *The Lancet* last year by Hunt,[4] who investigated the function of the gall-bladder and pathological conditions associated with it in a series of cases in which "bilious" symptoms were a marked feature. Reference will be made to his conclusions in a later section of this paper.

Menstrual Migraine.

Though migraine occurring in relation with menstruation has long been recognized, Thomson[5] has focused attention on the condition by a study of twenty-five cases. He took the view that these cases were not idential with migraine for various reasons such as absence in his series of all visual phenomena, and of localization of the headaches. Other writers disagree with this reasoning and with his belief that the contraction or walling in of the *sella turcica*, demonstrated radiologically in seventeen of the twenty-five cases, was the cause of the syndrome. Be this as it may, Thomson appears to have proved one point, namely that treatment by hormonal medication relieves a large percentage of such patients. His results have been reproduced by many others. Similar cases have been recorded in Adelaide, one such patient having been shown recently at a meeting of the Section of Clinical Medicine by Dr. R. G. Burnard.

Psychic Migraine.

Though psychic symptoms have already been mentioned, one should record that cases occur in which these symptoms assume such a dominant character as to mask others and so cast doubt on the diagnosis. Detailed hallucinations may occur or a psychotic state leading to impulsive acts of violence, even suicide or murder. Such psychic symptoms may culminate by the patient passing into a definite convulsive attack.

Ætiology.

What you have listened to with considerable boredom I fear, for a recitation of signs and symptoms is dull fare, are the facts that have to be considered when we try to arrive at an understanding of their causation, the pieces of the jig-saw puzzle that is migraine.

Many and ingenious are the theories that have been propounded to explain the ætiology of this symptom-complex and the mechanism of the seizures, but none of these theories is entirely satisfactory in explaining all the manifestations of the disorder.

The Reflex Theory.

The reflex theory implies that a local irritation in some part of the body by its continued or recurrent activity sets up the attacks. In this connexion the eyes have been held highly responsible. Many people have held, and still hold, the view that most, if not all, cases of migraine are due to muscle imbalance or refractive errors, especially astigmatism.

Probably Hurst has been most insistent upon this view, and has maintained that practically every patient with migraine suffered from eye strain, and nearly all derived benefit if not actual cure by correction of their errors.

My belief is that this greatly overstates the case. Refractive errors do, though not necessarily, cause asthenopia and headaches, but these headaches are not necessarily migraine. I believe, however, that a patient with a tendency to migraine who has refractive errors or a definite heterophoria, will have the frequency and severity of his attacks increased thereby, and that correction of these errors, even small ones, will in a large percentage of cases alleviate his symptoms, possibly even stop his attacks completely, at any rate for a time; but I do not

think that this proves that the ocular condition was the primary cause of the attacks. One must always bear in mind, too, the power of suggestion in assessing the merit of any "cure" of migraine, and spectacles are no exception to the rule formulated by Tsczank that "any material change in almost any direction in the patient's *régime* is apt to be followed by at least temporary improvement".

The Central Theory.

Many writers have attempted to explain what happens by postulating areas of irritation in any and every part of the central nervous system, produced by alteration in the pressure of the cerebro-spinal fluid, for instance by a temporary blocking of the foramina in the ventricular system, or by adhesions between the cortex and dura *et cetera*. The evidence produced in support of these surmises is quite inadequate to do more than supply a possible cause in very occasional cases which have come to autopsy. Mention must, however, be made of Spitzner, who has demonstrated in certain cases distension of the lateral ventricle on the side on which the headaches had occurred in life. Spitzner's specimens are in the Johns Hopkins Museum.

The Allergic Theory.

The allergic theory has much to recommend it. The hereditary factor common to the two disorders, allergy and migraine, has been established. The alternation of the two in the same patient is known to occur, and sensitiveness to food or other allergens is present in a large percentage of both conditions.

The occurrence of eosinophilia with the migrainous attack is another point of similarity to other allergic conditions. Moreover, Dattner reported that experimental migraine had been caused by the administration of histamine and choline, that is, the type of substances believed to be responsible in other allergic states.

One must comment, however, on the fact that though migraine does alternate with other allergic states, and though certain skin lesions *et cetera* of an allergic nature do occur with an attack of migraine, it is remarkable that the two conditions do not coincide even more frequently if they are both dependent on a common cause.

Could it be, I suggest, that the inborn metabolic defect in the individual patient, which allows on one occasion some "H" substance to pass through the liver and cause an angioneurotic œdema, on another occasion allows some similar, but not identical, "H" substance to reach the circulation and cause an attack of migraine?

Pickering and Hess[6] have recorded some experiments on the production of headaches, working with injections of histamine. This work is an advance in one respect, especially in that they put forward a very convincing theory to account for the actual pain. Further reference will be made to this later on.

That the liver may be at fault is also strongly suggested by the article, previously quoted, by Hunt, who found that gall-bladder disease was much more common in the migrainous patients whom he investigated than in the general population, and though he concluded that the gall-bladder disease was secondary to or coincident with the migraine and not the cause of it, he was not so convinced that liver dysfunction was equally blameless. He states his intention of investigating the cholesterol content of the blood in migraine patients, but it is to be hoped that he will not limit his researches to this one substance.

Other workers have investigated the sensitivity of migrainous patients to various allergens, mainly those gaining access *via* the digestive tract, and have achieved some measure of success by treatment directed to desensitization as well as by elimination from the dietary of the foods found to contain these allergens.

Balyeat has recently published a book (I have not yet seen this book), the review of which in *The British Medical Journal* indicates that he has similar views of the alimentary origin of a majority of cases.

Mention having been made of liver dysfunction as a factor in the ætiology of migraine, leads us to the consideration of another theory which has been put forward, namely duodenal stasis. Those, however, who have particularly studied this aspect have concluded that, though duodenal ileus was present in a majority of patients examined by X rays, the actual causative condition was some altered metabolism resulting from digestive abnormality, and that either the bile or the liver was at fault.

Others have followed this up by investigation of the liver function, using the Van den Bergh test (for the bilirubin estimation), and also testing the quantity of urobilinogen in the urine. These investigations have given contradictory results in different hands, so that little or no reliance can be placed on them. I understand, however, that tests such as these are by no means conclusive evidence one way or the other of hepatic function.

I feel that one should not leave this question without saying a word or two about constipation. Very many sufferers from paroxysmal headaches, which are presumably migraine, definitely associate their attacks with constipation, which seems to be the result of a colonic spasm. Resumption of peristalsis, action of the bowels, and relief of the headache usually occur together in this class of case. I am not so certain, however, as to whether the headache is the result of the constipation, or whether the latter is the result of some circulating toxin which causes the headache as well.

The Hypophyseal Theory.

The hypophyseal theory presupposes that the pituitary is subject to a variable degree of swelling, physiological or otherwise, and in certain individuals is capable of producing pressure upon surrounding structures, especially the optic tracts or chiasm and the structures contained in the cavernous sinus, namely the third, fourth and sixth nerves, the first division of the fifth, and the internal carotid artery.

At first glance this seems to fit the facts fairly well, but on more careful scrutiny it becomes more and more difficult to account for all the symptoms which may occur in migraine by such a mechanism. For instance, many of these symptoms seem to be definitely cortical in origin, and it is extremely

difficult to see how pressure upon even the carotid artery could produce symptoms which are selectively cortical, though we cannot altogether deny such a possibility, the pressure producing its effect by interference with the fibres of the sympathetic plexus surrounding the artery.

At the same time it is possible for the hypophysis to be guilty not by local action, but by so altering the hormonal balance or metabolism as to set in motion a train of events such as we have already considered when discussing liver function *et cetera*.

Endocrine Theory.

There is no want of evidence to show that there is endocrine imbalance in many migrainous patients either at the time of the attack, or generally. One may cite the well-known liability of females to attacks with menstruation, the usual cessation during pregnancy and after the menopause, and the occurrence of hyperthyreoidism or hypothyreoidism *et cetera* in some migrainous sufferers.

While suggestive, this idea only goes a little way in explaining migraine as a whole.

CASE III. A female patient forty-five years of age, unmarried, had had severe migraine since her early twenties, the attacks being mainly menstrual. One unmarried sister was a sufferer from migraine. Two married sisters did not have migrainous headaches. The mother was not a sufferer. Two aunts, unmarried, were martyrs to migraine.

This case illustrates the endocrine factor as well as the hereditary element.

The Vasomotor Theory.

The advocates of the vasomotor theory believe that the migrainous attack is precipitated by an angiospasm of the cerebral vessels, or possibly the reverse effect, or one followed by the other, the result being either an ischæmia or an œdema of the corresponding parts of the central nervous system. The opponents of this view ask why this should come on only in isolated areas. This objection, though the answer is not obvious, may be countered by the rejoinder that such localized vasomotor reactions do take place in other allergic conditions, notably in angioneurotic œdema, asthma and hay fever.

Though this theory is really one to explain the mechanism of the attack rather than the underlying cause, it fits in extremely well with the known facts, and has much experimental data as well as clinical observation to recommend it.

Such vascular changes in the cranium could be brought about by over-action or under-action of the vegetative nervous system, resulting from some unknown cause, psychic or otherwise, or from some toxic substance circulating in the blood, capable of producing similar effects.

Attempts have been made, with reported success, to demonstrate the presence of vaso-constrictor substances in the blood in cases of asthma, epilepsy and migraine. The most active of such substances known to us is probably histamine or some similar body—the "H" substance of Lewis—which he postulates to explain the skin reactions which occur in allergic states and experimentally, for example, the "triple response".

In man, histamine has the following action on blood-vessels, namely, dilatation of arterioles and paralysis and distension of capillaries (Samson Wright).[7] It thus differs in man from its action in most lower animals, where arteriolar constriction takes place.

If, then, this unknown poison which Leeuwen and Zeydner and Kammerer found to cause contraction of strips of artery in their experiments, is actually histamine or "H" substance, it does not follow that its action on their patients would have been vaso-constriction, but rather vaso-dilatation.

Hare, on the hypothesis of vaso-dilatation occurring in the cerebral vessels or some of them in migraine attacks, carried out some investigations on patients during their paroxysms. By compression of the carotid artery on the opposite side to the headache in unilateral migraine he increased the pain, while in bilateral headache pressure on the carotid increased the pain on the opposite side and relieved it on the same side. Other observations tended to show that in some cases occlusion of superficial arteries, for example temporal or occipital, relieved the pain.

If we accept this, we have at once an explanation, and a surprising one, of the cause of the pain in these cases, namely, that it is distension of the arteries themselves. This, in effect, was the conclusion arrived at by Pickering and Hess, already mentioned, as the result of their experimental injection of histamine.

Undoubtedly the matter is not so simple as this, but there seem (to me, at least) good grounds for thinking that some histamine-like substance circulating in the blood could account for all the phenomena of migraine, especially if we take into account the fact that one of the results of such a toxin would be to mobilize various counter reactions, for example, secretion of adrenaline, which if in excess would account for variations in the clinical picture, for example the "red" or the "white" type. If we add the pituitary to the picture, we could go on indefinitely perhaps imagining the algebraical result on any organ of these potent substances, having different actions and in variable concentrations.

All this is very delightful, but the spanner in the works is to account for our "H" substance, if, indeed, it is the culprit. Is it a constant product in the bowel, normally rendered inert by the liver or the bile, or is it formed only under certain conditions? Could it be influenced, as we know migraine is influenced, by various psychic reactions? These and other questions future research will have to decide.

Diagnosis.

Diagnosis can be arrived at only by a careful consideration of the history, both of the actual attacks and of all the circumstances connected with them, and of the patient's past history and family history.

Difficulty is likely to occur in cases in which the only symptoms are headaches without any characteristic accompaniments. Here, as indeed in all cases which are definitely migrainous also, search should be made for other causes for the headaches. Ocular conditions at once suggest them-

selves, but it is not only refractive errors and heterophorias which can thus be discovered. Out of a host of cases of headaches seen in the last few months there have been a majority in which refractive errors were the cause (though, of course, ametropia does not by any means always cause headache), a number which were undoubtedly migrainous, and a number which were suspected to be due to sinusitis. The remainder included a case with double papillœdema, probably due to intracranial tumour, several cases of glaucoma, a number of cases of arteriosclerosis, with and without retinitis, a case of renal retinitis, and other less obvious conditions.

The onset of headache due to eye-strain usually bears a time relationship to the use of the eyes, coming on, for instance, within an hour or so after beginning near work, or after watching a cricket match or the cinema, though in the case of eye-strain due to presbyopia the headache is often delayed, being experienced in the morning after reading at night.

This recalls a female patient who appeared at Moorfields one morning, complaining of such headaches. The surgeon turned to us and asked: "What does a headache coming on in the morning suggest to you?" Before anyone could answer, the patient remarked: "Indeed, sir, it's nothing of the sort".

Another type of headache which I have come to associate with sinusitis is one which tends to recur at the same time every day, and which fades again after an interval.

Another variety of headache, the result in most if not all cases of paranasal infection, posterior ethmoidal or sphenoidal, is the syndrome known as Sluder's neuralgia. Two excellent articles on this condition appeared in THE MEDICAL JOURNAL OF AUSTRALIA in 1931 and 1932 by Leonard B. Cox.[8] The pain here is unilateral, especially referred to the orbit and also to the occiput and back of the neck, and one of the diagnostic features of most of the reported cases is relief of the pain by cocainization of the spheno-palatine ganglion, or of the posterior ethmoidal cells and sphenoidal sinus.

In one case of unilateral head pain which I believed to be of this type, an X ray examination was made and opacity of the posterior ethmoidal cells on the side of the pain was demonstrated. The films also showed a sella which was small and much shut in by ossification of the posterior clinoid ligaments, that is, a sella of the exact type described by Thomson. On my advice, cocainization was carried out when the next attack of pain occurred, with prompt relief of the pain, but the patient then disappeared.

Reference has already been made to the difficulty which may arise in distinguishing between migraine and organic intracranial disease.

Another type of case which must present much difficulty in diagnosis is that with much abdominal pain and vomiting and little or no headache. As stated earlier, the history should help much with these cases, but even the history may do little except suggest previous attacks of gall-stone colic. I think that I have met this class of case in the past without recognizing it, in fact without knowing that it existed; and no doubt such patients do at times find their way to the operating theatre, where the surgeon is surprised to find no pathological change in the gall-bladder or a much more innocent looking appendix than he had anticipated. Perhaps a blood examination would clear up some doubt in such cases, if it failed to show a marked leucocytosis, and especially if it at the same time demonstrated an eosinophilia.

Pathology.

Very little that is definite except of a negative character can be stated about the pathology of migraine. Riley, following an exhaustive study of the literature, states that very few cases that have come to autopsy have been critically examined from the viewpoint of migraine. What evidence there is, with few exceptions is negative. The exceptions are the few cases of ophthalmoplegic migraine in all of which according to Riley some gross lesion has been found in or near the third nerve or its nucleus. From this he is inclined to regard this type of migraine as symptomatic, though admittedly it does not fully explain such cases as those in which ordinary migraine goes on for many years, to be suddenly succeeded by an attack with ophthalmoplegia, perhaps with permanent palsy. The number of autopsied cases is, however, too small to draw definite conclusions.

Another class of pathological change has been brought forward by Spitzner, as already mentioned; I refer to his cases with distension of the lateral ventricle. Here again the number is small, and it seems quite unwarranted to conclude from them that all cases of migraine can be explained on a similar basis, especially when we consider the thousands of patients, dead from any causes, coming to autopsy in whom no such cerebral lesion is found, though obviously a definite percentage of them must have suffered from migraine.

Compare the pathological findings in epilepsy.

Treatment.

Practically every known form of therapy has been tried at some time or other in this symptom-complex. It is not my intention to say much about treatment by drugs, but I hope the physicians present will do so.

In the first place I think the patient suffering from migraine should be under the care of a physician. Obviously a thorough investigation to make sure of the diagnosis is of great importance. This, besides a study of the patient's general health and any special stresses to which he may be subject in his work *et cetera*, should include examination of his eyes and correction of any errors found.

My own rule in cases of headache which may be due to eye-strain is to correct most errors of refraction and muscle imbalance, even minor ones which, in the absence of such symptoms, one would disregard. I feel that this is logical and justifiable and can at least do no harm beyond the cost of a pair of spectacles, while it may do much good by relieving the asthenopia and so the headaches or even, let us admit it, by suggestion.

Pathological conditions of the nasal sinuses should be sought and, if present, treated, and search made for other sources of irritation or focal sepsis. This will include the teeth, tonsils *et cetera*, and in cases in which dysfunction exists with the female generative organs, gynæcological examination and treatment may be indicated. I have little knowledge of what

measure of success is likely to result from such measures, but Thomson records two cases in which menstrual migraine began only after a gynæcological operation; and I have had under my care one patient whose menstrual migraine followed an operation for squint. Hunt records a number of cases of bilious migraine in which gall-bladder disease was found and treated by the surgeon, but with no benefit to the headaches.

I do not wish to imply by this that surgery should not be employed where an indication for it exists, but I feel that in dealing with a patient with a big functional element in his symptoms, and many migrainous patients have this element, we should beware of resorting to surgery without a very clear indication.

While on this subject it may be of interest to mention that several cases have been reported in which surprisingly good results followed ligature of the middle meningeal artery.

Other operative procedures which have been undertaken for the relief of migraine are removal of the cervical sympathetic ganglia and periarterial sympathectomy of the internal carotid, but the results do not seem to have been very gratifying.

Turning to medical treatment, steps should be taken first of all so to regulate the patient's life as to avoid all possible stresses and worries.

Much good may be done by attention to dietary errors and elimination of articles of food found to precipitate an attack, and this line may be followed further to discover the causative allergen in the individual case, assuming that the train of symptoms is allergic in origin.

Hunt has treated a series of cases which he regarded as being of the bilious type by giving bile salts over a long period. The drugs employed by him were sodium-glycocholate and "Decholin", the latter a proprietary preparation, and the results reported by him were almost uniformly good.

In the same type of case good results have been reported from duodenal lavage.

For the type of case in which an endocrine dysfunction appears to be present much benefit has resulted from endocrinal therapeutic agents. Thus Thomson used "Theelin" containing ovarian hormone, but others have reported good results from prolan prepared from the pituitary and "Emmenin", which is derived from the placenta, and there are, I believe, a number of other preparations on the market which have been used with benefit.

Of the various drugs which have been employed, my knowledge is small and their number great, so I will leave it to others here present to tell us of any which in their experience are worthy of trial. Gower's mixture, containing bromide, tincture of gelsemium and nitro-glycerine, is, of course, well known to you, and has stood the test of time, and "Luminal" has given excellent results, while Tzanck reports great benefit from ergotamin tartrate.

For the actual attack, the treatment will be mainly symptomatic. Thus after seeing to the patient's comfort as far as possible by quiet, darkened room *et cetera*, the indications are mainly the relief of pain and such symptoms as vomiting.

For the pain most of the hypnotic and analgesic drugs, singly or in combination, can be expected to bring some measure of success, and the idiosyncrasy of the patient will often decide just what combination of drugs will best relieve him. In the worst attacks resort may have to be made to morphine.

Hunt states that adrenaline, if given early by injection, will abort a large percentage of attacks, though he admits having only a limited number of cases in which it has been used. This is only natural, for it is unusual for a doctor to see a patient during an attack unless it be a very severe one, and the injection of adrenaline is not a matter which can ordinarily be left to the patient. Presumably, then, the cases in which he used adrenaline were of more than average severity, and all the more notice must be taken of his good results. It is noteworthy, too, that benefit from this drug is in accord with the assumption that migraine is closely connected in origin with the allergies, and also with the view that the attack may be actually caused by a vaso-dilatation, the result of sympathetic action or of a vaso-dilator substance circulating in the blood.

Before leaving the subject I would like to quote, from Critchley and Ferguson's article, the desiderata expressed by them for the investigation of cases suspected to be or diagnosed as migraine.

1. A careful study of the patient's own previous history and family history, and a minute study of the symptomatology.
2. Physical and psychological examination.
3. Ophthalmological examination.
4. Radiological examination of the sinuses, *sella turcica*, gall-bladder and gastro-intestinal tract.
5. Full examination of the cerebro-spinal fluid, including pressure readings.
6. Biochemical investigation, including blood-sugar, urine and alkali reserve.
7. Basal metabolic rate determination.

This all sounds fairly thorough, but even so one could add to it by testing the sensitiveness of our patient to various allergens and investigating his biliary and hepatic functions *et cetera*.

To look at it from a purely commercial standpoint which, of course, none of us do, we should not regard the migrainous sufferer as a nuisance, to be lightly dismissed with a prescription, but as a valuable asset to our practices who, if he can stay the distance, can be investigated in all sorts of ways, by almost all branches of medicine, and if at the end of it he is no better (but he almost certainly will be) we can at least have the satisfaction of having left nothing undone.

Conclusion.

In concluding, I would like to say that I quite realize the fact that this paper does not in many respects do justice to the subject, nor do I think that it is possible to cover the whole ground in a paper of this length. Although much has been learned, there is much that is not fully understood, and it is more than probable that many of our present views about this puzzling condition will have to go into the discard before the final word about migraine is written.

Meanwhile we are to a great extent groping in the dark in our treatment of this condition, and this paper merely aims at presenting a review, with a hope of promoting discussion.

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DISORDERS OF THE MENOPAUSE.[1]

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THE selection of the subject for this paper was reached only after a good deal of consideration. Menstrual disorders do not receive the attention which their importance merits; in fact it is often difficult to find more than passing references in most text books of gynæcology. Notwithstanding this, there is probably no subject which is more generally before the practitioner, and in many cases ideas on treatment are vague. It is to endeavour to clarify ideas on this important subject that the following remarks are presented.

The word menopause, strictly speaking, implies the cessation of menstruation. In every-day use it has come to include a great many quasipathological conditions which may affect women at the "change of life". A group of diseases such as cancer, diabetes, chronic nephritis and hypertension, numerous skin conditions from vague paræsthesiæ onwards, and a whole host of symptoms have been generally labelled menopausal. A moment's consideration serves to eliminate many of these, but there remains quite a residuum which, in our present knowledge, we ascribe to the metabolic convulsion which occurs as the endocrine balance of the body is temporarily undergoing reorganization.

While the menopause is essentially a physiological process, pathological states may arise at this time, and one must be prepared to recognize and deal with these rather than adopt the attitude that everything will in time return to normality.

The first essential, therefore, is to have some clear concept of the normal menopausal state in order that deviations therefrom may be more clearly recognized.

THE NORMAL MENOPAUSE.

The menopause begins, as a rule, between forty-two and forty-five years of age, and by a process of gradual adjustment is completed within two or three years. However, judging by the cessation of the menstrual period, ages between forty and fifty-five may in some cases be within normal limits. It will often be found that a delayed menarche corresponds with an early menopause and *vice versa*. The physical basis of the cessation of the menstrual function is directly due to exhaustion of the ovarian primordial follicles and withdrawal of the internal secretion of the ovary.

A normal menopause is probably experienced by about 20% of women; that is to say, in these women the menstrual periods cease either gradually or abruptly, with possible reappearances once or twice in the next six months, and there are very few phenomena beyond occasional hot flushes. These women are invariably well preserved physically and of active habit. Just as there is little physical disturbance during the bodily and mental adjustment of puberty, so there should, in healthy persons, be as little discomfort when the organs tend to atrophy slowly. It can be understood, however, that if the atrophying organs are not completely normal and healthy, then various irregularities in the ideal cycle may occur.

Distressing phenomena, without obvious physical basis in many cases, are complained of by many women during the change of life, and one is apt to consider that these symptoms are often so marked as to be almost disabling at this time. This, however, is not the case. About 85% of individuals continue their normal occupation without hindrance, although experiencing various symptoms, sufficient to cause complaint at times.

ABNORMAL MENOPAUSE.

Of the women who, therefore are not quite "normal" in their menopausal phenomena, we should recognize three main groups: (*a*) Those in whom the menstrual loss is either excessive or prolonged although the subjective symptoms are not unbearable. (*b*) Those in whom the menstrual termination is within normal limits, but who suffer severely from various "menopausal syndromes". (*c*) Those in whom there is a definitely diseased condition, for example, tumours, chronic nephritis *et cetera*.

Anatomical Changes.

As the activity of the ovarian secretion wanes there is a definite upset in the function of the other endocrine glands such as the thyreoid, suprarenal and pituitary. This is manifested by changes in many tissues in the body, and locally by a gradual atrophy of the internal genitalia. The fully developed nulliparous uterus is an organ three inches long, two inches wide, and one inch thick, with a cavity about two and one-half inches long. After several pregnancies these measurements may be slightly increased.

During the menopause the ovaries become smaller and sclerotic. The uterus undergoes considerable atrophy, this change being generalized—the cervix becomes smaller, and the length of the uterine cavity is lessened. The intravaginal cervix recedes so that the vaginal fornices are obliterated. The vaginal folds are smoothed out, and the epithelium becomes

[1] A post-graduate lecture delivered at the Alfred Hospital, Melbourne, November, 1933.

thin and easily rubbed away. Thus is the condition known as senile vaginitis initiated. These rubbed patches easily become infected, and areas of granulation tissue appear, exuding a watery offensive discharge, often bloodstained. The granulating surfaces may adhere, especially at the vault, and separation of these bands may produce fresh small hæmorrhages. The patient suffers from severe pruritus, and the condition may have to be very carefully differentiated from carcinoma of the *corpus uteri*.

Occasionally the external genitalia also undergo very marked atrophy in the *labia minora* and round the vaginal introitus. The epidermis becomes thin and the connective tissues fibrose and contract. If very marked, this condition is known as kraurosis. There is usually intense itching and pain from the contracture. It is difficult to treat, though good results have been claimed for replacement ovarian therapy. Failing this, complete excision of the vulva gives permanent relief.

Menopausal Syndromes.

The intimate interdependence of the endocrine glands in their control of bodily functions is never more beautifully demonstrated than when one of the group suddenly ceases to function. Compensatory adjustment occurs in time, but while this is taking place the metabolic control of the organism is seriously impaired, and symptoms invariably arise.

During the "normal" menopause we imagine that the ovarian secretion is withdrawn gradually and that the process of adjustment takes place with little discomfort to the individual. If, however, the cessation is sudden, either at the time of the natural menopause or as a result of surgical operation or irradiation, then severe symptoms may be anticipated. In passing, it may be noted that the loss of clinically healthy ovaries causes much more discomfort than when the ovaries are clinically cystic or diseased as, presumably, already minor endocrine adjustments have been in progress. It is therefore desirable to conserve the function of healthy ovaries and to omit the radiotherapy of simple conditions in younger persons. To take an example, in a case of uterine fibroids resisting medical measures in a young woman it is far sounder for a capable surgeon to perform myomectomy, or even hysterectomy, than to terminate the excessive menstrual loss by X ray castration. This point will be raised again in dealing with local uterine lesions.

In an endeavour to reduce the untoward manifestations of the menopause to some degree of order, a simple classification may be adopted.

Thus we may recognize: (i) Cardio-vascular disorders, including flushes and rises in blood pressure; (ii) gastro-intestinal disorders; (iii) urinary disorders; (iv) mental disorders, including headaches and neurosis; (v) sub-thyreoid conditions, obesity and arthritis; (vi) disorders of menstrual loss.

Cardio-Vascular Disorders.

Hot flushes occur with remarkable regularity and are probably a normal manifestation in greater or less degree, and are a very definite indication of the onset of the menopause. These are supposed to be due to general irritability of the sympathetic nervous system controlling the capillary vessels and sweat glands.

Flushes are usually more marked during an artificial menopause due to castration than in the natural "change of life", but they may be very distressing indeed in the latter category also. Associated with the flushes are other minor vasomotor symptoms such as sudden perspirations and waves of dizziness.

Ovarian transplantation during operation, if it has been found necessary to perform ovarian ablation, is certainly of value in cases where it can be practised. It certainly lessens, and may almost eliminate these sensations.

Replacement ovarian therapy has a large field of usefulness here and, although commercial preparations are not as active as one could wish, their use is recommended in fairly large doses by injection methods. Satisfactory personal results in cases of this type have been obtained with "Sistomensin".

About 20% of patients at the menopause have a definite increase in blood pressure. Often, however, one finds that the rise is variable; that is, the pressure may be increased by worry and excitement, particularly in patients of nervous temperament, falling again when the tension relaxes and the outlook is placid once more. However, it may be that it is the precursor of a definite renal lesion which should never be overlooked. Treatment with simple sedatives is all that is required as a rule. Sometimes phenobarbital in association with caffeine sodium salicylate may be exhibited, especially if the rise in tension is maintained. Satisfactory results are the rule, though the treatment may need to be maintained for some time.

Gastro-Intestinal Disorders.

A distressing "indigestion" with much heart-burn and flatulent eructations may be associated with the menopausal state. The discomfort bears little relationship to the partaking of food and, as a rule, there is not much difficulty in the diagnosis of a functional dyspepsia as against peptic ulcer or gall-stones.

Ordinary alkaline mixtures give some temporary relief, but the administration of sodium sulphocarbolate in 0·6 gramme (ten grains) doses combined in a mixture (to be alluded to later) is of the greatest benefit to this type of patient.

A small-intestinal irritation is another type of "indigestion" which may be encountered. The patient usually suffers from constipation, but the ever-present activity in the small bowel may be both seen and heard. The use of salol and magnesium sulphate in these cases is of decided benefit.

Urinary Disorders.

In some women there is frequent complaint of distressing urinary symptoms, particularly frequency and dysuria.

Careful examination in some cases reveals sufficient physical cause, such as marked *prolapsus uteri* or tumour pressure. In others, after cystoscopy and

urological investigation, lesions in the urinary tract are discovered and are amenable to treatment. However, there remains quite an appreciable number in whom, after all investigations have been completed, no definite lesion is found to account for the symptoms, which are often very distressing. The urine voided is quite normal to clinical tests. Cystoscopy may have revealed a mild congestion of the trigone of the bladder, probably insufficient to cause such discomfort. The term "habit frequency" has been applied to this condition by American investigators.

This bladder irritability is accompanied in many cases by symptoms easily recognized as "menopausal", for example, vasomotor effects or gross menorrhagia. On the other hand, the syndrome may be the most marked of all the menopausal manifestations.

We would therefore suggest that middle-aged women who complain of intense frequency and tenesmus without physical lesions, should be considered as suffering from a disorder of the menopause, and that treatment on this hypothesis should be instituted.

The lack of ovarian hormone at this time temporarily allows undue activity on the part of its opposing endocrines, particularly the adrenals, resulting in sympathetic stimulation and irritability of the smooth musculature under its control. Exclusion of the ovarian hormone is also accompanied by a decrease in the blood calcium. As calcium is a general depressant to the sympathetic nervous system, there is therefore a definite indication to replace the loss and to lessen the activity of the overstimulated sympathetic system.

The therapy indicated in these cases is the exhibition of ovarian substance and calcium products by injections, which may be made thrice weekly to initiate the course. Local treatment of the symptoms in the vast majority of cases is doomed to failure, as, apart from the hypertonus of the bladder musculature, there is nothing pathological in the urinary tract.

Nervous Disorders.

Many women approach the time of the menopause with exaggerated ideas of the disabilities and discomforts of this period, due in many cases to the traditional "old wive's tales" of the horrors which lie in store. It certainly seems peculiar that so much is made of what should be merely a physiological epoch and that so little should be known amongst lay minds of the simple facts of personal hygiene or incipient cancer.

"The nerves" and fear of what may occur are a source of great worry to many persons at this time, and a sympathetic attitude on the part of the doctor is essential. Though their troubles may appear slight, they are very real to the patient and are not improved by ridicule.

Severe nervous disorders such as melancholia or anxiety neurosis are not common, but lesser forms are unhappily far too frequent—probably 70% of abnormal menopausal patients suffer from some form of emotional instability, and often develop a marked inferiority complex.

The question of an endocrine dyscrasia for nervous disorders is often canvassed, the protagonists pointing to the frequent nervous molimina associated with normal menstruation. Often the severity of flushes corresponds more or less to the degree of inherent nervous instability, though there is little dispute as to the endocrine origin of flushes.

In those women who develop neuroses at this time there is usually some defect in the nervous constitution added to abnormal mental ideas regarding sex, particularly overpowering concentration upon the power of reproduction and its indicator, menstruation. The loss of this function and hence, in theory at least, the loss of attractiveness towards the opposite sex, bears heavily on those who tend to brood on these subjects. In addition, there is the fear of conditions which are popularly supposed to follow the "change of life", such as undue obesity and loss of libido, cancer, high blood pressure and even insanity.

The feeling of inferiority induced by the sudden cessation of menstruation may react heavily upon the unstable mental subject. This impression is maintained by the paræsthesiæ, flushes *et cetera* which continue to remind the woman that her reproductive life is terminating. The idea may be increased by well meaning advice from elderly females and physicians who take the positive opinion that lack of ovarian secretion is the main cause of the symptoms.

The usual reaction is therefore a profound anxiety with a tendency to become more and more depressed until in some cases a true melancholia with all its train of symptoms is apparent, or a defensive overreaction in the patient's endeavour to retain her feminine prerogatives.

In brief, loss of ovarian activity may be the precipitating factor responsible for the appearance of these neuroses; but the main causes of these abnormal mental states are those of nervous instability in general, namely, heredity, intoxications *et cetera*, together with general anxiety over the consequences of the cessation of her reproductive life.

Treatment on psychotherapeutic lines in these cases, each patient being considered as an individual, is probably more efficient than "shot gun" ovarian substitution therapy. To endeavour to aid these sufferers the psychotherapist should stress that the power to reproduce is after all a secondary matter to the individual as opposed to its primary value in the human organization, and by careful explanations should guide their impressions as to the sensations to be expected and their accepted causation.

Menopausal Arthritis.

In women, about the time of the menopause one often notes a mild osteoarthritic condition in the knees. In such cases the overlying skin is often harsh and dry, with lack of elasticity, and a peculiar doughy consistency is found in the subcutaneous tissues. No pitting on pressure is noted under such conditions.

The general tone of these patients is often poor, the abdominal musculature is weak, there is often gross obesity of the buttocks and lower limbs, and flat foot is a common accompaniment.

The brawniness of the lower limbs in many cases is indistinguishable from the solid swelling of myxœdema. It is, however, as a rule definitely localized.

It is probable that this manifestation arises at or about the climacteric when the thyreoid and ovarian secretions are profoundly modified. The joint changes are insidious in onset and slow in progress—definitely periarticular, at least at first—which suggests the possibility of a nutritional deficiency associated with glandular dyscrasia.

In a more advanced stage there is synovial swelling of the joints, and only in the last stages do osteophytic outgrowths make their appearance.

Clinically, in middle-aged women there is often complaint of increasing weight and stiffness and discomfort in the knees, increasing when rested, and alleviated by mild exercise. Examination reveals slight thickening of the synovial membrane, with the "doughiness" of the surrounding tissues referred to above. Fine crepitation in the joint is usually noted on passive movement. In late cases typical osteoarthritic changes have occurred.

This type of arthritis is doubtless familiar to all clinicians; its slow progress and limitation to the soft structures render it more amenable to treatment than the common traumatic arthritis.

In treatment early recognition and institution of therapy help to check the progress. Reduction of excessive weight by fluid and carbohydrate restriction, together with administration of full doses of thyreoid extract, are indicated. Locally, faradism and massage, complemented by hot air baths, are of decided benefit. Vaccine treatment, however well meaning, is as a rule useless.

Pseudocyesis.

Many women at the time of the menopause, especially when it is associated with sudden cessation of the periods, fear the occurrence of conception. The amenorrhœa and increasing obesity cause great worry at times, as often the sufferer is the mother of a grown up family. It is sometimes difficult to assure some of these patients that it is merely the change of life and not a further pregnancy that causes the symptomatology. In such cases accurate information may be obtained early (within three weeks of a missed period) by means of Friedman's test of pregnancy, a modification of the original Aschheim-Zondek reaction.

Menopausal Hæmorrhages.

During the normal menopause the periods may cease abruptly, an unusual course which commonly only follows artificial interference, or the menstrual interval may lengthen with less and less loss at each time until complete cessation occurs within a few months. A few normal women undoubtedly lose excessively until menstruation finally ceases. However, one must be careful to exclude any untoward conditions before accepting this type as "normal".

An excessive loss, either occasionally or long continued, at this time is as a rule pathological, and the cause must be sought. Delay may be fatal in these cases.

It is of first importance in all cases of excessive and irregular bleeding at or near the age of the menopause to determine whether the hæmorrhage is menstrual in origin or the symptom of a neoplasm, particularly carcinoma *cervicis* or *corporis*.

Every patient who complains of these symptoms should be afforded careful and complete pelvic and general physical examination. To omit such an examination is most reprehensible.

As a result of such investigation many lesions may be detected. We cannot come to any conclusion regarding the endometrium or upper cervix without the aid of diagnostic curettage. One may ask when should this procedure be recommended in the face of apparently negative physical findings.

The consideration of the history should be of great value to the clinician. If it appears that the loss, however excessive, is definitely periodic and associated with menstrual molimina, it may be due to endometrial lesions, but almost certainly no carcinoma is present. The amount lost and the reaction of the patient will then determine the further procedure.

Should the hæmorrhage occur after a definite interval of amenorrhœa, and especially if it is recurrent in nature, no delay in investigating the condition by surgical means should be allowed. In spite of the absence of definite lesions on routine physical examination, the practitioner must insist upon exploration of the uterus by dilatation, curettage and examination of the tissues removed by microscopy.

Uterine cancer can be treated successfully if early diagnosis can be made. It is usually an ulcerative lesion and, as such, the hæmorrhage is more or less continuous, with no relation to menstrual intervals; such a history is in itself an urgent indication for curettage if no physical lesion is discovered.

Let us now consider the group of cases in which uterine hæmorrhage at the time of the menopause must be dealt with.

They will be considered as: (i) Cases in which no gross abnormality can be detected in the pelvic viscera on physical examination, (ii) cases in which definite pathological lesions are found.

Group I Hæmorrhages.

Hæmorrhage occurring in the first group of cases may be due to: (*a*) *Fibrosis uteri*, (*b*) glandular hyperplasia of the endometrium, (*c*) circulatory disturbances, (*d*) functional ovarian conditions.

(*a*) *Fibrosis Uteri.* In *fibrosis uteri* there is a gradual replacement of muscular uterine tissue by excessive fibrous tissue. In the endometrium the glandular tissue also becomes fibrous, and in the vessels there are definite arteriosclerotic changes. Hæmorrhage is always excessive, as the contractility of the uterine muscle is seriously impaired, resulting in inability to check the hæmorrhage from sclerosed vessels.

There is considerable difference of opinion as to the ætiology of this condition, but there is little question that mild chronic infection plays a definite part. Retroversion of the puerperal uterus is practically always associated with subinvolution, which persists and which becomes a chronic hyperplasia if not corrected early. This retroversion

interferes with free drainage of the puerperal uterus and is a potent cause of low chronic infection. *Fibrosis uteri* is probably a natural sequela of such subinvolution. There is often other clinical evidence of chronic infection, such as lacerated and inflamed cervix or old parametric infiltration, to be found in these cases.

Clinically there is complaint of excessive loss, which may amount to flooding, and prolongation of the periods. Associated symptoms are often persistent backache and leucorrhœa. The general aspect of the patient is unhealthy, though many are frequently obese. Examination reveals an enlarged, firm heavy uterus, which is often lying backwards in the pelvis. Associated lesions, such as chronic cystic cervicitis or old parametric bands drawing the uterus away from its central pelvic position, may be discovered.

The treatment of this condition should be radical, either by surgery or radiotherapy.

Medical treatment which consists in the exhibition of uterine styptics is useless as a rule, as the muscle is unable to contract sufficiently to control the excessive loss. Curettage may be necessary to eliminate malignant conditions, but it is not curative and the choice of treatment lies between hysterectomy or radiotherapy.

In cases in which there are lesions in addition to the *fibrosis uteri*, such as an enlarged thickened cervix, and possibly evidence of chronic toxæmic absorption, hysterectomy (either total abdominal or vaginal) should be performed. The subtotal operation only partially deals with the condition, and leaves a definite focus of infection in the cervical stump. We consider that vaginal hysterectomy is the operation of choice in these cases, especially when the patient is obese.

Radiotherapy, either by radium or deep X rays, should be reserved for those cases in which no other lesion than the uterine condition is found. It is wise to preface the radiation by preliminary diagnostic curettage in all cases.

(*b*) *Glandular Hyperplasia.* In glandular hyperplasia the blood loss may be very severe. The uterus is usually enlarged and firm, whilst the endometrium is thick and succulent. In the microscopic picture it is reminiscent of the premenstrual changes in the endometrium, namely many dilated tortuous glands with actively proliferating epithelium and markedly increased vascular supply.

Accurate diagnosis can be reached only after preliminary diagnostic curettage.

In the treatment of this condition, radiotherapy has one of its greatest successes. It may be applied in the form of deep X ray therapy for four portals with the use of adequate copper screenage or in the form of radium applicators. The most suitable radium dose is 30 milligrammes screened with one millimetre of platinum and enclosed in rubber tubing as an intrauterine applicator. The total exposure required is about 2,100 milligramme-hours.

(*c*) *Circulatory Disturbances.* Heart, liver and kidney diseases should be recognized by thorough general examination. Unrecognized syphilis may cause serious hæmorrhages which clear up on antisyphilitic treatment. Certain blood dyscrasias and calcium deficiencies must also be considered. These conditions call for appropriate treatment of the disease present. Calcium deficiency, if present or suspected, may be aided by diet, for example, green vegetables, farinaceous foods and buttermilk. "Tricalcine" is an excellent preparation for the administration of calcium in an assimilable form.

(*d*) *Functional "Ovarian" Disturbances.* The functional ovarian bleedings may be associated with absence of the luteinizing hormone or persistent Graafian follicles. This diagnosis must not be considered until a thorough investigation of the patient has been made without positive results. Hæmorrhage in these cases is often particularly severe and at shorter intervals than normal.

Treatment is still *sub judice*. Injections of prolan, a luteinizing hormone prepared from the urine of pregnant women, may be given, and are occasionally successful. So far the extracts on the market are variable in their content, but we have obtained good results in cases of this type with "Sistomensin" in large doses by injection methods.

Radium or deep X ray therapy should be instituted if rapid response to glandular therapy is not evinced.

Group II Hæmorrhages.

In those cases in which definite pathological change is present the commonest conditions encountered are: (*a*) Uterine fibromyomata, (*b*) carcinoma of the *cervix* or *corpus uteri*, (*c*) senile endometritis.

(*a*) *Fibromyomata.* The tumours may be large or small, multiple or single, and submucous, interstitial or subperitoneal.

At the time of the menopause fibroids often cause trouble, having been practically symptomless till then. The lessening blood supply to the pelvic viscera at this time explains the frequent occurrence of degenerations, infections and necrosis.

Sometimes the tumours become smaller, sink down into the true pelvis and cause pressure symptoms, occasionally even bringing about retention of urine.

Fibroids as a rule demand some form of treatment, though occasionally, when this is refused, their progress is very slow and the symptoms minimal. Two lines of treatment are available, surgery and radiotherapy.

Surgical interference is indicated when: (i) The tumour mass reaches to umbilicus. (ii) Pedunculated subperitoneal tumours or submucous fibroids are discovered. (iii) Associated ovarian tumours are present. (iv) Malignant degeneration is suspected. The operation of choice is total abdominal hysterectomy or vaginal hysterectomy.

If radiotherapy is preferred it must not be given until adequate examination under anæsthesia, together with diagnostic curettage, has been undertaken. This is because of the not uncommon association of carcinoma *corporis* with fibroids.

Radiotherapy is contraindicated in the presence of submucous fibroids on account of possible necrosis or in any cases of pelvic infection (recent or old standing).

It is the treatment of choice, either by radium or deep X raytherapy, in medium sized interstitial fibroids.

(*b*) *Uterine Carcinoma.* In the menopausal epoch, carcinoma *cervicis* is more likely to be found than carcinoma *corporis*, which as a rule gives symptoms some years after the completion of the change of life. Any hæmorrhage at that time is usually of the most serious import.

Time does not allow of a full discussion upon uterine carcinoma, but we should remember that cancer in the early stages is painless, and that a thin blood-stained watery discharge in a middle-aged woman always calls for immediate investigation.

(*c*) *Senile Endometritis.* Senile endometritis is a condition concomitant with the atrophic adhesive and mildly infective processes we have already considered under senile vaginitis. Occasionally the external os becomes sealed, and the retention of uterine secretions behind this obstruction leads to pyometra. However, the vast majority of pyometra are the result of carcinoma *corporis*, and on discovering pyometra clinically in middle-aged women, it is wise to treat the condition as carcinomatous without more ado.

General Management.

We have indicated in passing over the various symptoms which may be encountered at this time, methods of treatment which are specially applicable to the condition under consideration.

Under general treatment, maintenance of health by such standard means as fresh air, moderate exercise and adequate rest must be insisted upon. The bowels must not be allowed to become confined, and dietary restrictions should be imposed if there is any tendency to undue obesity. Sedatives may be required for insomnia or general discomfort, and bromides are the safest for this purpose. Small regular doses are usually quite satisfactory.

An objection to the routine use of bromides is that no adequate control of psychological disturbances may be obtained without inducing signs of bromism. This tendency to cutaneous eruptions in women at the menopause may be accounted for by the sensitiveness and lowered resistance of the skin, which is a common climacteric phenomenon. In such cases sodium veronal may be substituted.

The advantages of sodium veronal are that it is freely soluble, acts more rapidly and has little effect save on the central nervous system; it is more completely excreted than bromides and is effective in doses of 0·06 to 0·12 gramme (one to two grains) three times a day. It can be conveniently alternated weekly with bromides as a routine sedative.

Ovarian Extracts.

The treatment of menopausal symptoms by ovarian extracts has yielded varying results. It is often noted in a series of cases that some patients are greatly benefited by the administration of some form of ovarian hormone, while others are apparently unaffected. It will be found that those patients who do not respond to treatment have some ovarian hormone in the urine, while those who improve have none.

Every normal woman excretes a certain amount of follicular hormone in the urine (about ten to twenty rat units per litre). This level is fairly constant.

Menopausal cases are therefore divisible into: (i) Those with no ovarian hormone, (*a*) artificial—operation or radiation, (*b*) some spontaneous cases; (ii) those still having some ovarian hormone, (*a*) some spontaneous cases.

When there is no ovarian hormone found in the urine we have a group in which great improvement may be confidently expected from hormonal therapy. The spontaneous cases which may be benefited may often be guessed at clinically in that menopausal symptoms are often very pronounced and the menses very irregular. The artificial cases are self evident.

In patients menstruating normally with various symptoms it is clinically unlikely that much relief will be obtained. If we find in these cases that folliculin is being excreted, it is certain that hormonal therapy will not be of benefit, except perhaps from the psychological aspect.

The method of assay is as follows. The urine is tested for folliculin and prolan *A* by the action of extracts upon spayed and immature animals. When ovarian function has ceased, folliculin is absent and prolan *A* makes its appearance; this occurs almost immediately after castration. If, however, the ovarian activity is still maintained, folliculin will be demonstrable and prolan *A* absent.

We have treated patients in whom ovarian hormone is absent by intramuscular injections of "Sistomensin" (Ciba) two cubic centimetres thrice weekly to initiate treatment. This dose may be lessened to one injection weekly after about a month. These patients have received considerable symptomatic relief. There is a marked diminution in subjective symptoms, particularly the vasomotor disorders, and a noticeable feeling of well-being. "Sistomensin" is also of use when applied to the organotherapy of menopausal "ovarian" hæmorrhages.

Follicular therapy does not appear to be of avail in those patients who still secrete ovarian hormone in the urine and who clinically are still menstruating normally. In such cases we use a prescription incorporating rhubarb, bromide and calcium with the addition of other drugs as may be necessitated by the symptoms. The result is a "shot gun" prescription combining purgative, sedative and styptic principles, which appears to be of very real value to many patients suffering from minor discomforts during the menopause. For those who prefer a ready-made preparation on these lines "Prokliman" (Ciba) will be found entirely adequate in its results. In its favour may be stated the fact that it contains a small amount of dried ovarian substance in addition to the therapeutic principles.

Conclusion.

In conclusion, the management of the menopause calls for diagnostic skill and sympathy with the patients' troubles through this, the most difficult phase of their life. Everything that can divert their attention at this time is of value, and the fact that the disturbance is transient should be stressed.

These patients' symptoms are very real to them; deal with them conscientiously and you will be rewarded by the satisfaction of helping a band of sufferers over the "change of life" to the goal of a peaceful maturity.

PATHOGENICITY OF YEAST-LIKE FUNGI.

By J. I. CONNOR, M.B., M.S., D.T.M. & H.,

AND

MARGOT MCKIE, B.Sc.

(From the Walter and Eliza Hall Institute, Melbourne.)

MOST authorities are agreed that *Monilia albicans*, the yeast-like fungus first isolated from cases of thrush in infants, can act as a pathogen for human skin, and one case has been reported in which this organism was apparently responsible for the death of an infant by meningitis and bronchopneumonia.[1]

The fungus has been repeatedly isolated from cases of chronic paronychia,[2] intertrigo, inflammatory lesions at the angle of the mouth, erosio-interdigitalis.[2] [3] [4] The fungus is pathogenic for rabbits and infections have occurred in laboratory workers handling cultures. Rhoda Benham, of New York, has shown that *Monilia albicans* is not found on normal skin, but occurs in the fæces of 18% of normal individuals.[5]

Many other strains of yeast-like fungi have been isolated from normal skin, inflamed skin, sputum, the mouth and fæces of human subjects. These strains have been subdivided into groups such as monilia, cryptococci, mycodermata, by differences in their morphology, biochemical and serological reactions. None of them has as yet been proved to be anything more than a saprophyte.

While investigating the pathology of paronychia and intertrigo, we have isolated in addition to those strains of albicans reported,[2] several strains of yeast-like organisms which differ from *Monilia albicans* in pathogenicity for rabbits and in fermentative reactions. These appear to be the cause of the inflammatory condition from which they were isolated.

The strains studied fall into three groups.

Table I shows the source and the main characteristics of each group.

TABLE I.

Strain.	Pathogenicity for Rabbits.	Formation of Mycelium in Culture.	Maltose Fermentation.	Source.
I. *Monilia albicans* 1	+	+	AG	Typical strain from paronychia.
II. 10	−	−	A	Strain from erythematous lesion of sole of foot.
62	−	−	A	Type culture from Commonwealth Serum Laboratories.
III. AO ..	−	+	A	Strain from a case of general monilíasis.
AL ..	−	+	A	Strain from web of toes.
MS ..	−	+	A	Strain from erosio-interdigitalis.
SN	−	+	A	Strain from blood culture.

Group I includes typical *Monilia albicans* from paronychia. Fourteen strains have been the subject of a previous article.[2]

Group II includes one type culture from Commonwealth Serum Laboratories and one strain, No. 10, isolated from a chronic inflammatory patch on the sole of the foot.

Group III includes two strains isolated from web of toes, one from interdigital lesion, and one from blood culture.

Strains from Group II and Group III are non-pathogenic for rabbits, and form acid only in maltose and saccharose. Group II forms no mycelium *in vitro*, though delicate mycelium was present in epithelium of the lesion of origin in the case of Strain 10, Group II. Group III forms typical mycelium in 1% glucose agar stab and slide cultures.

The presumptive evidence that some of these strains were pathogenic was so definite that we decided to compare the serological reactions of the three groups. For example, Strain AO, Group III, was isolated from the feet of the following patient.

A female patient, aged twenty-one, single, had suffered from vulvitis, intertrigo of groin and axillæ, chronic paronychia and inflammatory lesions between the toes for twelve months prior to examination. Flakes of exfoliated epithelium from the areas between the toes when soaked in 10% potash solution showed delicate mycelium on two occasions. Cultures on Sabouraud's maltose agar and 1% glucose agar gave a profuse growth of yeast-like organisms. Mycelium was present in stab cultures and slide cultures. Improvement in the patient's condition commenced when treatment was directed to fungicidal remedies, and cure resulted six months later.

Strain 1, Group II, was obtained from a patch of inflamed yellowish scaly skin of the sole of the foot, which had been present for five years and which was slowly spreading to the webs of the toes. The site of the lesion was the ball of the foot, extending back towards the instep and forward to the webs of the fourth and fifth toes. The lesion was similar to those described by Wachowiak and Fleischer[6] from which they cultivated yeast-like organisms, and resembled those due to epidermophyton; shavings of epidermis from the lesion in 10% potash solution showed delicate branching mycelium on several occasions. Cultures on three occasions several months apart inoculated on Sabouraud's media and 1% glucose agar showed yeast-like forms. No mycelium was present in repeated stab and slide cultures. This lesion apparently cleared after the application of salicylic acid in ointment and plaster, but has recurred and is again slowly spreading on the sole of the foot.

Rabbit antiserum was prepared from a typical strain in each group, that is, strains 1, 10 and AO, and the following tests for cross agglutination and precipitin and absorption of agglutinins and precipitin were carried out.

Technique for Agglutinin Absorption.

In addition to the ordinary cross agglutinin tests absorption of agglutinin tests were carried out as follows: Rabbit antiserum was diluted one in ten. To one volume of this diluted serum was added four volumes of approximately one in five saline emulsion of absorbing strain grown one to two days on 1% glucose agar or Sabouraud's media. After mixing, the serum emulsion mixture was left overnight at 37° C., after which it was centrifuged and supernatant liquid was removed. This supernatant clear fluid constitutes a dilution of the original antiserum (less some agglutinin). It was used for further tests with the remaining strains of all the groups. (See Table IIA.)

TABLE II.

Agglutination with Unabsorbed Sera.

Rabbit Antiserum.	Serum 1, Group I.	Serum 10, Group II.	Serum AO, Group III.
I. Strain 1 ..	1 in 960	1 in 640	1 in 320
II. Strain 10 ..	1 in 1,280	1 in 2,560	1 in 640
Strain 62 ..	1 in 1,280	1 in 2,000	1 in 480
III. Strain AO ..	1 in 320	1 in 160	1 in 640
Strain AL ..	1 in 320		1 in 640
Strain MS ..	1 in 320	1 in 160	1 in 640
Strain SN ..	1 in 320	1 in 320	1 in 640

TABLE IIA.

Agglutinations with Absorbed Sera.

Rabbit Antiserum.	Strain 1, Group I.	Strain 10, Group II.	Strain AO, Group III.
Serum 1.			
Unabsorbed ..	1 in 960	1 in 1,280	1 in 320
Absorbed with Strain 10 ..	1 in 800	1 in 100	1 in <100
Absorbed with Strain AO ..	1 in 800+	1 in 800+	1 in <100
Serum 10.			
Unabsorbed ..	1 in 640	1 in 2,560	1 in 160
Absorbed with Strain 1 ..	1 in <100	1 in 2,000	1 in <100
Absorbed with Strain AO ..			
Serum AO.			
Unabsorbed ..	1 in 320	1 in 640	1 in 640
Absorbed with Strain 1 ..	1 in <100	1 in 400	1 in 640
Absorbed with Strain 10 ..	1 in <100	1 in 100	1 in 400

Precipitin tests and absorption of precipitin tests were also carried out following the technique of Stone and Garrod.[7]

Extracts were prepared by emulsifying one Sabouraud agar slope of growth in ten cubic centimetres of saline, autoclaving at fifteen pounds for thirty minutes and centrifuging. The clear colourless fluid thus obtained contained an abundance of precipitinogen and was superior to those prepared by boiling or by slow autolysis.

One volume of serum (absorption of precipitins) was mixed with four volumes of precipitin extract made as above. The mixture was incubated for one and a half hours and kept at room temperature overnight, after which it was spun and the supernatant fluid was removed and tested for precipitin with the remaining strains of all the groups.

The precipitin-absorption tests were found to be rather difficult to interpret, as the titres were low after absorption. The results are not included.

TABLE III.

Precipitin Tests with Unabsorbed Sera.

Rabbit Antiserum.	Serum 1, Group I.	Serum 10, Group II.	Serum AO, Group III.
I. Strain 1 ..	1 in 20	1 in 12	1 in 4
II. Strain 10 ..	1 in 12	1 in 30	1 in 16
Strain 62 ..	1 in 8	1 in 30	1 in 16
III. Strain AO ..	1 in 4	Nil	1 in 20
Strain AL ..	1 in 2	Nil	1 in 16
Strain MS ..	1 in 4	Nil	1 in 16
Strain SN ..	1 in 4	1 in 4	1 in 20

Enough evidence was present, however, from the above tests to infer that we were dealing with three distinct groups of related organisms.

Comment.

Classification of the above strains according to our present knowledge would be as follows: Group I, *Monilia albicans*; Group II, white cryptococci (some strains are pink); Group III, *Monilia parasilosis* (Ashford). It is possible that Strain No. 10, Group II, is a saphrophyte and that the causative fungus did not grow in our cultures. In the case of Strain AO, Group III, it is difficult to explain the signs of general moniliasis responding to fungicidal applications associated with the finding of mycelium in epithelium and growth of typical monilia which forms mycelium *in vitro* unless we accept the organism as the cause of the lesion.

My excuse for reporting the above findings must be, first, one of curiosity regarding these strains, and second, the fact that any observations that may lead to further knowledge of these fungi may help their classification and also help us to recognize and treat effectively the lesions which they cause in humans.

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(3) R. W. Benham: "Certain Monilias Parasitic on Man: Their Identification by Morphology and by Agglutination", *Journal of Infectious Diseases*, Volume XLIX, September, 1931, page 183.

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(7) K. Stone and L. P. Garrod: "Classification of Monilias by Serological Methods", *The Journal of Pathology and Bacteriology*, Volume XXXIV, July, 1931, page 429.

TABLE IV.

Sugar Reactions of Three Groups.

Group.	Sugars.									
	Galactose.	Maltose.	Saccharose.	Mannite.	Lactose.	Dextrose.	Raffinose.	Inulin.	Dulcite.	Lævulose.
I	A	AG	A	—	—	AG	—	—	—	AG
II	A	A	A Slight	—	—	A	—	—	—	A
III	A	A	A	—	—	A	—	—	—	A

Reports of Cases.

DOUBLE UTERUS WITH ABSENCE OF RIGHT KIDNEY AND URETER.

By H. A. RIDLER, M.B., Ch.M. (Sydney), F.R.A.C.S.,
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MISS A.B., aged sixteen years, had menstruated for about eighteen months. Her periods came on every two or four weeks and lasted from one to four days; but she did not lose very much. Lately her periods had been more regular; she always had pains with them; the pains were getting much worse and on the last few occasions she had been confined to her bed. On vaginal examination an enlarged uterus was felt, smooth and regular on the left side, and with a "bulge" on the right side.

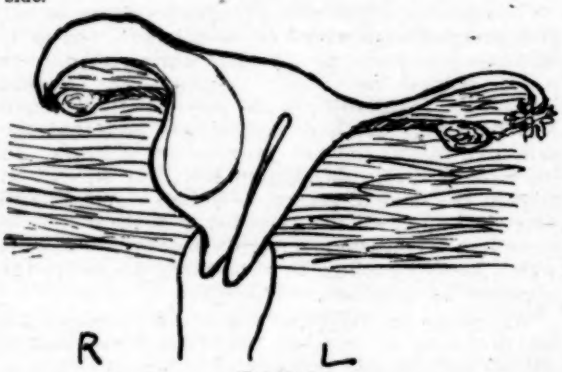

FIGURE I.
Showing shape of uterus as felt on examination.

The patient was kept under observation for some months and the uterus enlarged slightly. A diagnosis of sarcoma of the uterus was made. Dr. C. V. Bowker, who also saw the patient and assisted at the operation, made the diagnosis of double uterus with retained menstrual blood in one half, the right side.

FIGURE II.
Section of uterus, showing method of insertion of Hegar's dilator, and the two uterine cavities with one cervix.

At the operation a Hegar's dilator was pushed through the cervix and common wall into the right half of the uterus; nothing drained away, the reason for this being that the old menstrual blood was too thick. The abdomen was opened, the right side of the uterus was incised, and "thick blood" oozed out; this was mopped up. The distended right tube was removed and the right half of the uterus was cut away and the edges sewn over, leaving a uterus with one cavity.

The right kidney and ureter were absent; the left kidney was in its proper place. On cystoscopic examination only one ureter, the left, could be found opening into the bladder.

Reviews.

A MANUAL ON PSYCHIATRY.

THE busy medical practitioner can rarely spare the time even to scan the many text books on mental disorder, but a synoptical survey of this vast subject will always have its place on the medical bookshelves. Dr. John H. Ewen, in his "Handbook of Psychiatry", has aimed at such a synopsis for use as a book of ready reference and at the same time as a practical aid to the student taking examinations for higher psychological degrees.[1] The author has given, in as short a space as possible, the views of numerous authorities on various types of mental disorder and has carefully avoided being dogmatic.

The book is divided into six sections. After an introduction in which some general features of mental disorders are discussed, the book deals in a systematic manner with the psychoses and psychoneuroses and mental deficiency. In these sections the author may have sacrificed lucidity in the interests of brevity, but one must remember the object in view. The closing sections are more applicable to Great Britain, dealing mainly with the legal aspect as applied to that country and embracing the main features of the *Mental Treatment Act*, 1930, and the *Mental Deficiency Act* as amended 1927. The appendices tabulate: (*a*) the British and American systems of classification of mental disorders, (*b*) the Board of Control's schedule of causes and associated factors in insanity, and (*c*) their rules regarding mechanical restraint. Certain obvious errors, for example, "the immediate . . . withdrawal of 50 oz. of C.S.F.", give the impression that a careful revision of the text is indicated.

MIDWIFERY FOR NURSES.

W. O. GREENWOOD has written a small hand book of midwifery for Central Midwifery Board students which admirably fulfils the purpose for which it was designed.[2]

The author states that many midwives are alarmed at the amount of study that the usual text book appears to demand. This book, therefore, is made as small as possible but contains all that the midwife actually needs to know. The aim has been to make it a practical guide and to recrystallize knowledge which may sometimes be in danger of becoming inexact and yet needed in a clear-cut form at any moment.

In our opinion this book should prove very useful, and we can thoroughly recommend it. It gives in a clear, simple, and easily understood manner the essentials of midwifery, and as a reference book it can be re-read quickly.

In future editions we think that *post partum* hæmorrhage could with advantage be dealt with in greater detail. This is such an important aspect of midwifery for nurses that it would be of greater value to give a very definite and detailed plan of action to be followed in the mild as well as the more severe type of case.

[1] "A Handbook of Psychiatry", by J. H. Ewen, M.R.C.P., D.P.M.; 1933. London: Baillière, Tindall and Cox. Demy 8vo., pp. 275. Price: 12s. 6d. net.

[2] "Handbook of Midwifery for C.M.B. Students", by W. O. Greenwood, M.D., B.S., F.R.S.E.; 1933. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 120, with illustrations. Price: 5s. net.

The Medical Journal of Australia

SATURDAY, JULY 14, 1934.

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ROBERT JONES.

MODERN orthopædic surgery is inseparable from the name of Robert Jones. To think of one and not to recall the other would almost be like making a reference to the history of bacteriology without thinking of Pasteur, or to that of antiseptic and aseptic surgery apart from Lister. When Robert Jones died in 1933 he left more than a name inscribed for all time in the annals of surgery. He left hope in the hearts of the crippled, hope of restoration, if not to complete health and strength, at least to a life of usefulness and comparative comfort. He also did a great deal towards making the community at large realize its duty towards the crippled. Among medical practitioners, therefore, the story of his life cannot fail to arouse interest; they will find it the story of a man who was devoted to an ideal, who pursued his aim with singleness of eye, who exemplified all that was best in medicine and who may thus be set up as an example worthy of emulation. Non-medical people, if the story of his life be well told, will not only be interested in his achievements; they will see cripples through the compassionate eyes of one who was devoted to them; they will learn that much can be done to improve the lot of cripples; further, and this is of the greatest importance, they will learn that many crippling conditions can be prevented. The purpose of this article is to draw attention to "The Life of Sir Robert Jones", by Frederick Watson, that has recently been published.[1]

Watson's book fulfils all the requirements that the most exacting could demand. Here is told in a simple and sympathetic way the story of a man who became known as the creator of modern orthopædic surgery. We note that, like many other giants in medicine, he served an apprenticeship as a general practitioner. That fortune favoured him in his early association with his uncle, Hugh Owen Thomas, does not detract from his greatness; he used his uncle's teaching as a foundation on which he built the superstructure of his own achievement. To the very end of his life he had a mind receptive, sensitive and alert—he did not close his ledger at forty—and herein lay much of his power. He saw that the problem of the crippled child was both a surgical and social one; it had to do not only with limbs, but with the mind. No one else in his day appeared to recognize the double problem. Understanding the problem, it was natural that he should look for means of preventing the suffering that cried aloud for relief. As long ago as 1898 he and several others agreed on several points that are described by Watson as a revelation of prophetic clarity. They may be summarized as follows:

1. Few children are so incurable that they cannot become well if placed in proper circumstances for treatment.
2. A hospital for children suffering from chronic diseases should be recognized as a place where they may be sent in order to have the best chance of recovery.
3. Such an institution should be conducted on the lines of a hospital. It should be in the country and should be under scientific and sanitary auspices. A resident medical officer should be available, but the main responsibility should rest on the visiting staff.
4. Such a hospital should have an operating theatre.
5. Experience has shown that operative or medical treatment adopted in the country enhances the chances of recovery.
6. Such a hospital should not be regarded as a convalescent institution or confused with such an institution.

At the present time we know that these principles are being put into practice in many places. When

[1] "The Life of Sir Robert Jones", by F. Watson; 1934. London: Hodder and Stoughton. Royal 8vo., pp. 327, with plates. Price: 12s. 6d. net.

Robert Jones and his collaborators drew them up it was not clear how they could be adopted; the opportunities arose, however, and Jones was not slow to take advantage of them. Not only did he alter the whole outlook of crippled children and put their treatment on a new and stable basis, but when the war flooded Great Britain with disabled and injured men, he did the same for them.

This account of the life of Robert Jones carries a message for many. The messages to the medical profession and to the general public have been stated. Moreover, the book shows beyond dispute that orthopædic surgery is a subject demanding special study and that its practice calls for special qualities of heart and hand. The book should be widely circulated. It should be read especially by members of hospital boards who are not disposed to realize the necessity for the creation of special orthopædic departments. Everyone, however, who reads this book will be stimulated and will realize that, though Robert Jones is present no more in the body, his spirit lives in the work of his pupils and in the orthopædic centres that he was instrumental in establishing.

Current Comment.

THE EFFECT OF AGE UPON THE JOINTS.

DEGENERATIVE ARTHRITIS is a name often applied to that type of joint change which in this country is usually designated osteoarthritis or hypertrophic arthritis. It is always recognized as bearing a definite relation to wear and tear, which in turn is due in the main to the decrescent changes that occur in the ageing body, and in part to trauma. Whether there are true inflammatory changes or not has been disputed, but there seems little doubt of the occurrence of genuine inflammatory phenomena during the progress of the joint affection in many cases. Von Mueller, following the current scepticism concerning the truthful appending of the termination "itis" in some instances where its use has been previously condoned, has introduced the term "osteoarthrosis", which has the merit of reminding us that this disease is at least largely degenerative in nature. But a difficulty arises that is somewhat akin to the confusion that has been noticeable in the study of arterial disease: what changes may reasonably be expected in the tissues at definite age periods, and what degree of degeneration is excessive and therefore abnormal? The clinician has his own rough standards in all these matters, but it is well to have some scientific basis for these impressions, and an effort to supply this in the case of the ageing knee joint is made by C. S. Keefer, F. Parker, W. K. Myers and R. L. Irwin in an interesting anatomical study.[1] They have examined 100 knee joints from 77 consecutive cadavers in the routine autopsy service of the Boston City Hospital. They excluded all cases of proven joint infection, that is, in the bacteriological sense, and submitted their material to careful inspection for any gross anatomical changes and to histological survey. They found no difference in the joints attributable to sex, nor could they correlate the alterations observed with occupation. Age, of course, told quite a different story. The graph showing the percentage of anatomical changes seen at various age periods is most instructive. The percentage line runs along at zero until the age of twenty years is reached; it then rises very steeply and touches 60% at thirty years, rises again during the next decade to 90% and remains thereabouts during the remainder of life. This is not surprising when one considers the extremely high proportion of persons over thirty years in whom some articular change may be observed. It is a matter of common knowledge that a man, say of thirty to forty years of age, may complain of pain in a joint following injury; some synovial crepitus or thickening may be observed, but examination of the corresponding articulation not infrequently reveals similar changes. The authors describe their gross anatomical findings: the patella displayed simple fibrillation of the cartilage in the lesser cases, going on to loss of substance and eburnation of the bone; the intercondyloid groove and the lateral condyle of the tibia also were frequently affected, and less often the articular surfaces of the femoral condyles. Thus the parts exposed to most actual movement and therefore to most trauma and wear, the patella and the part of the femur apposed to it, were conspicuously altered in the middle and later years of life. Other authors are also quoted as obtaining similar results from investigation of the knee and other joints. From such observations, as the authors remark, it is difficult to escape the conclusion that the changes due to advancing age are identical with those found in degenerative arthritis, though the point should be emphasized that such altered states of the articular surfaces are often found in those who have had no symptoms attributable to them.

Next, as regards the cause of hypertrophic or degenerative arthritis, the importance of special trauma and occupation is dealt with. An example is quoted of the arthritis found in the joints of the upper extremity of men using tools like hammers operated by compressed air. No special connexion could be traced between occupation and the observed changes in the present inquiry, but in this instance it must be pointed out that the study was made

[1] *Archives of Internal Medicine*, March, 1934.

on routine patients who died of various diseases, but who were not specially the subjects of arthritis. All that can be said is that when degenerative arthritis develops, it does so along the same lines as the regressive changes due to increasing age; such changes are accelerated and exaggerated by accidental and occupational factors, and the very parallelism here made manifest gives support to the belief that wear and tear constitute a very important cause in this common malady. Of course, there is often some other factor involved; for example, pain of any sudden or considerable degree is often due to superadded phenomena, such as inflammatory reactions. One conclusion of the authors is interesting; they found no connexion between the degrees of joint change and arterial degeneration. But though they could not relate these two in this inquiry, it is the impression of many clinicians that the persons who have pathological arteries are often those who have prematurely old joints, as evidenced by stiffness and crepitus. Here age may not be the cause of the arterial degeneration, but surely arterial affection spells lowered nutrition, which hastens decrepitude of the tissues.

In conclusion, it may be inferred that degenerative arthritis is essentially senility of the joints. Such a state may be accelerated by various factors, trauma, repeated and undue strain, static deformities *et cetera*, and it may also be confused in some instances by superadded features of quite different pathology, such as inflammatory conditions. But a clear distinction should be drawn between this and other forms of arthritis, for no therapeutic measures can be intelligently applied until the pathology of the lesion is understood and visualized.

ARTHRITIS.

FREQUENTLY it is not clear from clinical manifestations alone whether *arthritis deformans* is progressing or whether it is in remission. In such cases laboratory tests may be of value. For some years the erythrocyte sedimentation test has been used as an index of activity, as a guide to prognosis, and as a means of differentiation between rheumatoid arthritis and osteoarthritis. The rate increases during exacerbations of rheumatoid arthritis and decreases in the remissions, whereas in osteoarthritis it is unaltered or only slightly increased. The Arneth count has been employed for many years as a guide to the activity of infective processes, but by comparatively few people only; it seems to be worthy of considerably more investigation. Arneth classified the polymorphonuclear leucocytes into Types I, II, III, IV and V, according as their nuclei consisted of one, two, three, four or five or more lobes. The commonest forms are the binucleate and trinucleate; these are regarded as the younger types of mature cells, and the uninucleate types are regarded as primitive. In toxic conditions the uninucleate and binucleate cells predominate; this is referred to as a "shift to the left". It is suggested that the older types of cells are killed off and that the younger ones are called into action as reinforcements of the leucocytic defence army against the invading micro-organisms. In a recent communication, William B. Rawls, Benjamin J. Gruskin, Anthony A. Ressa, and Marie Jordon discuss the results of their studies of the Arneth count and the erythrocyte sedimentation test used together in "rheumatoid and mixed arthritis".[1]

The erythrocyte sedimentation rate was higher than normal in 89% of the tests applied to patients with rheumatoid arthritis, averaging 36 millimetres per hour, compared with an average normal rate of 12 millimetres; in 53% of these tests the rate was higher than 30. In "mixed" arthritis 64% of the tests revealed a sedimentation rate above normal, the average rate being 18 millimetres per hour, the rate being above normal in 15% only. The Arneth count revealed a shift to the left in 68% of cases in the rheumatoid group and in 57% in the mixed group. A shift to the left was associated with an increase in the sedimentation rate in 77% of a further series of tests applied to patients with rheumatoid arthritis and 58% of tests applied to those with "mixed" arthritis.

When the clinical condition improved (whatever the type of arthritis), 74% of the tests revealed a decrease in the sedimentation rate associated with a less pronounced shift to the left; when the clinical condition became worse, 65% of the tests revealed an increased sedimentation rate, together with a further shift to the left; while the clinical condition remained unchanged, 49% of the tests revealed no change in either the sedimentation rate or the Arneth count, and 24% revealed a decrease in the rate and a less pronounced shift to the left. The investigators disregarded the results of tests made when patients were known to be suffering from some intercurrent infection. They point out that such disorders as common colds and sore throats influence the results. They have also observed that the existence of some hidden focus of infection is apt to be associated with a persistently high sedimentation rate and a shift to the left. They conclude that the sedimentation rate and the Arneth count serve as an index of activity and may be used as a means of gauging the rate of progress of arthritic conditions.

The examination of the blood is greatly neglected by medical practitioners generally, despite the vast amount of work that has been done and the knowledge that has been gained in recent years. Estimation of the erythrocyte sedimentation rate presents no difficulty to anyone with an elementary knowledge of laboratory procedure; in the Arneth count the only difficulty, a slight one, is in staining the film. These procedures are at least worth testing in arthritis as well as other conditions. They are certainly of some value. Their simplicity commends them.

[1] *The Journal of Laboratory and Clinical Medicine*, May, 1934.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Implantation Endometriosis.

B. M. SEN GUPTA (*Monatsschrift für Geburtshülfe und Gynäkologie*, March, 1934) reviews the literature regarding the ætiology of endometriosis in operation scars of the abdominal wall. He gives the details of one such case in which the growth followed abdominal hysterotomy and tubal sterilization. When the growth was removed it was found to have no connexion with the parietal peritoneum or with the uterus and tubes. It was obviously caused by the transference of endometrial tissue during the previous operation, especially as the curette had been used when the uterus was opened. He could find no evidence that the growth was due to implantation of parietal peritoneum, hence the serosal theory regarding the ætiology of such tumours was not likely to be correct in this case.

The Diagnosis of Ruptured Ectopic Pregnancy.

H. S. BYCHOWSKAJA (*Monatsschrift für Geburtshülfe und Gynäkologie*, March, 1934) discusses the biochemical diagnosis of ruptured ectopic pregnancy by means of the pyramidon test. This depends on the presence of hæmatin in the blood serum. A drop of plasma from some citrated blood of the patient is added to a mixture of three cubic centimetres of a 5% alcohol pyramidon solution, eight drops of 50% acetic acid, and a similar amount of hydrogen peroxide. The reaction is positive if a deep amethyst colour is produced within two to three minutes. When no reaction occurs the solution remains colourless. After an investigation of a number of gynæcological conditions the author concludes that the reaction is not specific and has no special diagnostic value regarding ectopic pregnancy. It tends to be positive during menstruation, in cases of acute salpingitis when hæmorrhage is present, and in malignant disease, especially if associated with hæmorrhagic ascites.

Preternatural Patulousness of the Fallopian Tubes.

J. R. GOODALL (*The Journal of Obstetrics and Gynæcology of the British Empire*, February, 1934) gives the history of several patients who had attacks of pelvic peritonitis which is attributed to the patulousness of the Fallopian tube. He found that in these patients gas would pass through the tubes at a pressure of 40 millimetres of mercury; the pressure would then fall to 20 millimetres, and at this pressure the gas would continue to flow. A typical example of this type of patient was one who had had two attacks of pelvic peritonitis. After the first attack a Rubin's test was performed and gas passed at a pressure of 40 millimetres of mercury. The husband was examined and found to be devoid of spermatozoa, but pus cells and chains of streptococci were found. Three years later the patient again had pelvic peritonitis following intercourse the previous night. Other cases are recorded occurring in virgins in whom a vaginal infection has spread through the patulous tubes, causing peritoneal invasion. The author also reports four patients with chemical peritonitis following vaginal douching. In two of the patients a Rubin's test was carried out at a later date and the tubes were preternaturally patulous.

Studies on the Movements of the Uterus.

T. N. MORGAN (*The Journal of Obstetrics and Gynæcology of the British Empire*, December, 1933) reports the results of his investigations of the uterine movements of the rabbit. The method was to produce a uterine fistula and to study its behaviour under various conditions. A study of the hormonal control of the uterus showed that its activity varied from week to week. In oophorectomized rabbits the activity of the uterus was raised and constant. Within sixteen to thirty hours after coitus the uterus became quiescent and remained quiet for sixteen days and then gradually returned to normal activity again. If such an animal was subjected to oophorectomy the uterus again became active, leading the author to believe that the ovary, per medium of the *corpus luteum*, must have some sedative effect on the uterus, even before the *corpus luteum* has become properly developed. If 50 to 100 mouse units of œstrin were injected into either a normal or oophorectomized rabbit, a definite rise in the activity of the uterus was noted within twenty-four hours and passed off within forty-eight hours. On the other hand, if anterior pituitary extract was injected, no reaction took place for forty-eight hours, but the reaction was prolonged for many days. If, however, this preparation was injected into oophorectomized rabbits, no reaction took place, confirming the theory that the anterior pituitary acts only through the ovaries.

Vaginal Hysterectomy.

MORRIS DATNOW (*Proceedings of the Royal Society of Medicine*, April, 1934) discusses vaginal hysterectomy. When a choice can be made between vaginal and abdominal operations, the scale should be allowed to weigh on the side of the vaginal route for the following reasons: (i) There is less shock. (ii) There is more rapid convalescence and the patient's stay in hospital is shortened. (iii) There is better drainage. (iv) The absence of a scar has a psychological effect upon the patient, and many will more readily submit to operation when informed that their abdomen will not be opened. (v) There is no risk of incisional hernia. (vi) A prolapse operation can be combined with the hysterectomy. (vii) Post-operative care is simple. The only drawbacks to the removal of a uterus *per vaginam* are its size and fixation caused either by an old inflammation or a previous operation. Among the indications for the operation are: (i) A bleeding uterus, caused by fibroids, chronic subinvolution or polypi at the fundus. (ii) A very stout patient. (iii) Involvement of the skin of the abdomen by burns or infection. (iv) Sepsis of the uterus following criminal abortion, provided no other viscera are injured. (v) Inversion of the uterus. (vi) Cardiac or respiratory disease. (vii) In radical treatment of carcinoma of the vagina or cervix. (viii) As a preliminary to some complementary treatment, such as lead therapy, in incomplete treatment of carcinoma of the cervix. (ix) For certain cases of carcinoma of the body of the uterus.

OBSTETRICS.

The Calcium Problem in Pregnancy.

C. B. REED (*American Journal of Obstetrics and Gynecology*, December, 1933) attacks the calcium problem in pregnancy by inquiring into the disorders of the oral cavity during the later months of pregnancy. The fœtus requires 0·638 gramme of calcium per day, which is more than that contained in the entire diet of the average American woman, who fails to make use of dairy products so rich in calcium. The utilization of calcium depends entirely upon vitamins *C* and *D*. A certain amount of calcium could be obtained by special diets, such as milk, which gives up to 30% of its calcium. Unless a special diet is taken a diminution of the blood calcium is noted, and so, in spite of an increased demand, the deficiency is often as much as 0·42 milligramme per 100 cubic centimetres. That bacterial activity is a cause of dental decay is questioned by the author. Jones, Larsen and Pritchard found in 140 cases many teeth which were decayed before eruption occurred. In the babies examined at autopsy there was no cell infiltration, no soft tissue reaction, and no evidence of bacterial invasion. This evidence would support the theory that dental caries is at least initiated by a chemical process in which lack of calcium plays an important part. Vitamin *C* plays a leading rôle in the prevention of scurvy. Scurvy is essentially a capillary disease, associated with faulty metabolism of calcium and phosphorus. A diet rich in vitamin *C* will frequently reduce the thickness of the peridental membrane and convert soft, spongy, hyperæmic, gingival tissue into a normal condition. According to Major, guanidine is responsible for eclamptic convulsions. Guanidine is a waste product of voluntary muscle activity and is

neutralized under normal conditions by calcium. The author suggests that a diet rich in calcium and vitamins would do much to prevent caries and reduce the incidence of toxæmia.

Appendicitis in Pregnancy.

U. MAES, F. FITZHERBERT AND ELIZABETH FETHERIDGE (*American Journal of Obstetrics and Gynecology*, February, 1934) discuss appendicitis in pregnancy from the general surgeon's point of view. That an acute appendicitis is associated with pregnancy in no way alters the fact that it is appendicitis, and its early diagnosis and prompt surgical treatment are of paramount importance. Among the author's series of fifty patients there was only one death. It must be noted, however, that the illness of the majority of the patients was not extremely acute. The great risk is the failure of the peritoneum to shut off the infected area, resulting in generalized peritonitis. Moreover, any uterine movement accentuates the liability to peritoneal spread. When pus is present the authors do not hesitate to drain the peritoneum. The incision which gives the best exposure is the McBurney incision, placed higher and more laterally than usual to reach the caecum, which has been displaced by the growing uterus. The diagnosis offers difficulty owing to the laxness of the abdominal muscles, which in *multiparæ* masks rigidity. The blood picture is not of much avail, as a leucocytosis is normal in the later stages of pregnancy. The pain is frequently situated higher in the abdomen, simulating an upper abdominal condition. Putting the patient on the left side frequently helps in the diagnosis. The best type of operation is the same as that which would be used if the patient were not pregnant, and the authors fail to see any justification for performing a Cæsarean section at the same time, considering the risk an added one. The liberal use of morphine following operation is advocated. The authors advocate prompt operative measures once the diagnosis is reasonably clear.

Heart Disease Associated with Pregnancy.

E. B. CARR AND B. E. HAMILTON (*The Journal of Obstetrics and Gynæcology of the British Empire*, December, 1933) record their observations at their special clinic. One of them has been associated with this department for the past twelve years. Rheumatic heart disease constitutes 94·4% of the patients presenting themselves for observation, while congenital heart disease and other conditions, such as bacterial endocarditis, thyreoidism and hypertension constitute the remainder. The death rate was 6·4%, a reduction on the usual figure. This is achieved by selecting good risks and prevention or interruption of pregnancy in the bad risks. It may be taken that when a condition is sufficiently severe to warrant the termination of pregnancy it is sufficient to warrant sterilization. After twelve years' experience the authors are of the opinion that no one test is of any value in arriving at a decision, but the time-honoured opinion still holds good, "that if râles are present at the base of lungs the condition is a serious one". The obvious "bad risks" are congestive heart failure already present or a clear history of congestive heart failure. Another criterion of a poor risk is some other complication which is in itself dangerous. Recent manifestations of active rheumatic diseases contraindicate pregnancy, but not permanently. Age is a factor which must be considered; an age greater than thirty-five alone does not forbid pregnancy to a patient with severe heart disease, but it doubles the risk and indicates a stricter *régime*. Congestive heart failure often first shows up after some extra strain, as a shopping expedition or some febrile attack, and a patient with a cardiac complication should rest in bed with the most trivial febrile condition. Cæsarean section was performed on 20% of the patients; in the others, forceps were applied when the cervix was fully dilated. The authors found nothing to warrant the statement that patients with bad hearts have quick labours. Ether or nitrous oxide is the anæsthetic of choice. The use of other drugs frequently clouds the issue, possibly contributing to some collapse. In conclusion the writers make a plea for the individual care of the patient as against routine treatment.

Cerebral Tension in Eclampsia.

G. SPOLJANSKIJ AND A. JUZALEVSKIJ (*Monatsschrift für Geburtshülfe und Gynäkologie*, February, 1934) have investigated the tension in the brain during eclampsia. By puncture of the cisterna and the use of a manometer they show that the cerebral tension during eclampsia remains within normal limits. Chloroform narcosis has no effect on the tension. While there may be some increase in pressure of the spinal fluid, this does not mean that tension is increased in the brain. From these observations the authors conclude that Zangemeister was wrong in attributing the fits of eclampsia to an increase in intracranial tension.

Forceps Application in Breech Presentations.

F. RHEMANN (*Monatsschrift für Geburtshülfe und Gynäkologie*, March, 1934) discusses the treatment of impacted breech cases, and in particular the application of forceps or a blunt hook to the breech. The use of a blunt hook is not advisable if the child be alive. The usual form of forceps, and even the Kielland type, while accurately fitting the pelvic pole, is apt to slip when traction is applied. The author has devised an instrument which is a combination of the forceps and the blunt hook, and has used it successfully in five cases. One blade is the usual fenestrated blade of the axis traction forceps, the other resembles the Braun hook. The latter is first introduced and then the fenestrated blade is applied. No damage to the fœtus is reported.

External Pelvimetry in Contracted Pelvis.

F. KÜHBACHER (*Monatsschrift für Geburtshülfe und Gynäkologie*, February, 1934) discusses the value of two external measurements not usually employed in the diagnosis of contracted pelvis. The first is the lateral conjugate — the distance between the anterior and posterior superior iliac spines on the same side. If this be less than 12·5 centimetres, vaginal delivery is impossible. The second is the external transverse — the distance from the anterior superior spine of one side to the opposite posterior superiar iliac spine. He considers that in minor degrees of contraction these measurements are valueless and the probable outcome of the labour depends more on other factors, especially the type of contractions. However, in association with the other pelvic measurements, these new procedures are of value in more advanced cases of general contraction, flat pelvis and oblique contraction, and afford a means of determining the possibility of vaginal delivery in such circumstances.

The Use of Barbiturates and Other Hypnotics in Labour.

F. C. IRVING, S. BERMAN, AND H. B. NELSON (*Surgery, Gynecology and Obstetrics*, January, 1934) publish their observations of 860 patients at the Boston Lying-in Hospital who had during labour barbiturates alone or with some other hypnotic. During the expulsion stage nitrous oxide and oxygen were administered to all patients, ether being added on the rare occasions on which it was required. None of the 860 patients died, nor was there any adverse effect on the child or mother. The stillbirth rate was 0·93% below that of a previous year. Complete amnesia was aimed at. Pentobarbital, "Sodium amytal", scopolamine, "Pantopon", and rectally administered ether were tried, also a combination of these drugs was used. It was found that morphine derivatives with or without other drugs were unsatisfactory, as there appeared a definite delay in the respiratory activity of the infants compared with the other groups. The barbiturates led to a good deal of excitement when given alone. The best results were obtained when they were given in conjunction with scopolamine. There was no increase in the operative incidence as compared with the operative incidence among those who were not given hypnotics. The standard method adopted at the Boston Lying-in Hospital as the result of these investigations is the use of pentobarbital and scopolamine, and if restlessness occurs these drugs are controlled with ether given by the rectum.

Special Articles on Treatment.

(Contributed by request.)

XXXV.

TREATMENT OF TYPHOID FEVER.

THERE is no specific treatment for typhoid fever nor any way of aborting the disease. The typhoid fever patient is subjected to a prolonged wasting fever with toxæmia, and it is necessary to maintain the nutrition. The patient should be at once put to bed and all unnecessary muscular movements should be prohibited. A bed-pan should always be employed.

Diet.

The diet should be sufficient to avoid under-nutrition, but intestinal distension should be prevented.

The following diet is quite sufficient during the height of the disease; and the majority of patients would have difficulty in taking more.

Milk, 2½ to 3 pints	1,200 calories.
Eggs, 2, in egg flips	150 calories.
Lactose, 2 ounces	250 calories.
Cream, 2 ounces	120 calories.
Total	1,720 calories.

Lactose is very useful and has a high caloric value and is easily assimilated. It is chiefly given in milk. Tea, coffee and cocoa may be given with milk, cream and lactose. Broth and beef extracts are of little value as foods and are best left out of the dietary.

Seven feedings may be given in twenty-four hours, and as the majority of patients wake occasionally during the night, it is well to give food at these times. Very often it is wise to wake patients for a night feeding. There is no general rule on this point, except that marked wasting should not be allowed to develop.

In the event of a very prolonged and severe infection, I endeavour to increase the above diet to 2,500 calories or more by increasing the lactose and cream and adding Benger's food. It is often remarkable how well the general nutrition may be maintained in such cases.

An abundance of water to drink is the best method of combating the toxæmia, and patients should be induced to drink water at least every hour. A good practice is to have a jug at the bedside so that the patient can help himself by means of a rubber tube. If the patient is conscious and intelligent, the importance of this can be explained to him. If not, constant effort will be necessary to insure that a sufficient amount is taken. Three or four pints a day or more can be taken with ease.

The abdomen should be repeatedly observed for distension, and if this occurs the diet should be reduced till it is controlled. Alcohol is rarely given unless it is required as a stimulant, or unless the patient has been accustomed to its use. After each feeding and at night the mouth should be swabbed with a mixture of boric acid solution (4%), glycerine and lemon juice, equal parts.

Hydrotherapy.

So long as the temperature is 38·9° C. (102° F.) or over, the patient should be sponged thoroughly every four hours, for twenty minutes, with cool water. If the temperature remains high (39·4°, 40° C., or 103°, 104° F., or higher) gutter baths may be given. A sheet of rubber is spread over the whole bed and rolled blankets are placed on each side of the patient under this sheet. The weight of the patient converts the rubber-covered bed into a satisfactory tub. The body, except the abdomen, is sponged freely with cool water from a pail for twenty minutes. If shivering occurs, the bathing is stopped. Long ago I used the tub-bath described by Hare, of Brisbane, but for very many years I have given up completely this form of hydrotherapy.

Absolute cleanliness is essential, and special attention should be paid to the back, which should be rubbed with alcohol several times a day. The patient should be turned frequently, every hour or oftener. The bed should be protected by a rubber sheet and the buttocks should be washed with a 1 in 1,000 mercury bichloride solution after each stool. The bowels are generally constipated. Aperients should not be given, but a soap enema should be used every second morning, if needed.

Treatment by Drugs.

There is no specific drug treatment. Antipyretic drugs are contraindicated and the so-called intestinal antiseptics are valueless. It is generally wise to order a mild fever mixture.

Convalescence.

On the fifth evening after the temperature has returned to normal a dose of castor oil is given and following this a diet such as the following is gradually approached:

7.30 a.m.: Strained gruel, soft boiled egg, stale bread and butter, coffee and milk with lactose.

10 a.m.: Egg flip with one ounce of lactose.

12 noon: Thick soup, bread, brains, fish and minced chicken, well cooked rice with milk and sugar.

3 p.m.: Egg flip.

4.30 p.m.: Strained gruel, soft boiled egg, stale bread and butter, custard.

6.30 p.m.: Egg flip with one ounce of lactose.

If the tongue is coated and there is a tendency to diarrhœa, or if there have been marked abdominal symptoms, the administration of castor oil should be delayed and the return to solid food should be very cautiously made. For constipation simple enemata may be given if liquid paraffin with a small dose of fluid extract of cascara is not sufficient to open the bowels.

Patients may be propped up in bed on the seventh to the tenth day of normal temperature, and at the end of fourteen days may be allowed up on the lounge. Blaud's pills, six a day, should be given if there is anæmia.

Complications.

Toxæmia and Delirium.—Toxæmia and delirium are best treated by the administration of plenty of water, and this should be encouraged in every way. If sufficient is not taken, half a pint of normal saline solution may be given by the bowel every six hours. If delirium is present, an ice bag should be left constantly on the head and the patient should be watched constantly and never left alone, for, although apparently prostrated, a patient may get out of bed and try to escape. The draw sheet is often enough to keep him quiet. It should come up to the chin with the arms underneath. If there be great difficulty in controlling the patient, some form of restraint should be used. Veronal, 0·6 gramme (ten grains), in fifteen cubic centimetres (half an ounce) of brandy may be given as a sedative, or a dose of morphine, 0·015 gramme (one-quarter of a grain), may be injected hypodermically.

Meteorism.—The diet should be reduced to albumen water, whey, barley water and orange drinks. A large flat ice bag should be applied to the abdomen. Turpentine stupes may also be applied every four hours and 30 cubic centimetres (one ounce) of turpentine may be added to a simple enema, care being taken to see that it is thoroughly mixed with the water. Charcoal by the mouth and injections of pituitrin are sometimes helpful. A soft rectal tube may be passed every four hours and left in position for ten, twenty, or thirty minutes. Sometimes with meteorism the stomach is greatly distended and the passing of a stomach tube may give immediate relief. When the condition is controlled, peptonized milk, then Benger's food, and then lactose are added to the diet.

Diarrhœa.—The diet is reduced to albumen water or, in severe cases of diarrhœa, to water only. A mixture containing bismuth subnitrate 2·0 grammes (thirty grains), aromatic chalk powder 0·48 gramme (eight grains), and compound powder of tragacanth 1·0 gramme (sixteen grains) may be given every three or four hours. It is generally unwise to give opium by the mouth, owing to

the possibility of masking the symptoms of perforation, should it occur, but an enema of starch, 120 cubic centimetres (four ounces), with tincture of opium, 0·6 mil (twenty minims), may be given every four hours.

Hæmorrhage.—Hæmorrhage is accompanied by extreme restlessness with abdominal distension. The temperature falls to normal or subnormal and the pulse becomes more rapid. There may be extreme pallor with sighing respirations and great thirst, but sometimes the first thing to be noticed is the presence of blood in the stools. Discontinue all stimulants and fluids at once and give nothing but ice to suck for forty-eight hours, then give albumen water. Elevate the foot of the bed and remove the pillow from under the patient's head. Keep the weight of the bed clothes off the abdomen by means of a cradle. Suspend an ice bag from the cradle so that it just lightly rests against the lower right quadrant of the abdomen on a double piece of lint. Give morphine, 0·015 gramme (one-sixth of a grain), hypodermically to insure absolute quiet. See that the patient remains quite still for three to five days. Calcium lactate, 1·2 grammes (twenty grains), may be given three times a day. In cases of very severe hæmorrhage transfusion of blood should be done.

Perforation.—All connected with the care of the patient should be familiar with the symptoms and signs of perforation. These are: sudden abdominal pain, tenderness and rigidity of the abdomen, especially in the right iliac region, and later distension. There is generally a rigor soon after the occurrence of the pain, the pulse rate increases and there is a rise or, less frequently, a fall in temperature. The liver dulness is obliterated, but generally not till some hours after perforation. The symptoms of perforation may occur, then completely pass off, and later signs of peritonitis will appear. Directly the diagnosis of perforation has been made laparotomy should be performed. Morphine should not be given until the diagnosis has been definitely decided upon. Exploration should be advised in doubtful conditions and can be done under local anæsthesia. If a perforation is found, a general anæsthetic can be given.

Heart Failure.—In patients with a very rapid pulse and signs of heart failure digitalis is useful with 15 cubic centimetres (half an ounce) of brandy every four hours, and in the event of sudden collapse strychnine, 3·2 milligrammes (one-twentieth of a grain), hypodermically.

Cholecystitis.—The majority of patients with typhoid cholecystitis recover without surgical interference. For the pain an ice bag or hot stupes may be applied, but opium should not be given on account of the possibility of perforation. If the symptoms are acute and progressive, operation should be advised.

Phlebitis.—The leg should be elevated on the appearance of phlebitis and kept absolutely at rest on a pillow. It may be wrapped in cotton wool and lightly bandaged. Lead and opium lotion may be applied, and for severe pain sedatives and even morphine may be required. The leg should be used very little for at least six weeks.

Parotitis and Bone Lesions.—The treatment of parotitis and bone lesions is generally essentially surgical, owing to the likelihood of suppuration.

Preventive Treatment.

The room of the patient should be screened against flies, and no flies should have access to unsterilized excreta. The stools should be mixed with at least twice the volume of 1 in 20 carbolic solution and allowed to stand for three hours. The urine should be mixed with one-third of its volume of 1 in 20 carbolic solution and allowed to stand for one hour.

The principal danger exists when clothing has been soiled and, as it is not always possible to detect this, it should be disinfected as a routine by soaking in 1 in 20 carbolic solution for two hours. Mattresses should be sterilized by dry heat. Bed-pans and urinals should be kept separate and scalded after each disinfection of their contents. After handling the patient the hands should be thoroughly washed with hot water and soap and then disinfected in 1 in 1,000 mercury bichloride solution. Even when drainage enters a proper sewage system, it is essential to destroy the typhoid bacilli as above described. The nurse who has the handling of typhoid fever patients should have nothing to do with the food supply of other patients.

Before these precautions are omitted, at least two negative cultures from stools and urine should, if possible, be obtained. Hexamine, 0·6 gramme (ten grains), three times a day may have some value in clearing up a bacilluria. Carriers on whom treatment is unsuccessful should be under the supervision of the health authorities.

D. M. McWHAE,
C.M.G., C.B.E., V.D., M.D. (Melb.),
M.R.C.P. (London),
Honorary Physician, Perth Hospital,
Honorary Physician, Children's Hospital, Perth.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Anatomy Theatre, University of Adelaide, on March 29, 1934, DR. E. BRITTEN JONES, the President, in the chair.

Migraine.

DR. G. H. BLACK read a paper entitled "Migraine" (see page 37).

DR. GUY LENDON congratulated Dr. Black on the excellence of his paper and agreed that migraine was rarely curable. However, attention should be paid to premonitory symptoms, and many attacks could be either aborted or shortened by medication with "Luminal" or any other preferred drug during the stage between the morning and the attack. One of the commonest and most reliable warnings was the sudden development of a voracious appetite, and many patients recognized in this symptom an infallible premonition.

DR. H. HALLORAN congratulated Dr. Black on his very excellent paper. He wished to stress the value of small doses of "Luminal" as a prophylactic in severe or frequent attacks of migraine. He had not known a case in which this had not reduced the frequency or severity of the attacks. In most cases the attacks ceased entirely during the treatment. He gave half grain doses in the morning for six months and quarter grain doses for a further twelve months.

DR. H. T. ILLINGWORTH expressed his appreciation of Dr. Black's detailed paper. He referred to an experience in London in 1929, when he had occasion to relieve a busy national insurance practitioner who was suffering from migraine. The practitioner had informed him that he had had attacks of migraine for four years, averaging about six attacks per year. His main relief had been obtained by complete rest, including going away from his practice for a few days to the seaside, and absolute quietness. He used chloretone and morphine, but had been unable to find any drug a specific for his particular case.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Melbourne Hospital on May 16, 1934. The meeting took the form of a series of clinical demonstrations by members of the honorary staff.

Mitral Stenosis.

DR. LESLIE HURLEY showed a female, aged sixty-eight years, who had had rheumatic fever at the age of twelve. She had been admitted to the out-patient department on December 29, 1928, complaining for the past few weeks of shortness of breath on exertion and a slight cough with a little yellowish sputum.

On examination the cardiac apex was in the fifth intercostal space, 8·75 centimetres (three and a half inches) from the mid-line, and there was one finger's breadth of right heart dulness. A well marked presystolic murmur and thrill were present, and also a diastolic murmur inside the apex beat. A few râles were present at the lung bases, and there was very slight œdema of the ankles. The pulse rate was 78 in the minute and quite regular. Tincture of digitalis, 0·72 mil (twelve minims) to be taken three times a day, had been prescribed, and within a fortnight there had been marked symptomatic improvement.

The patient had been attending the out-patient department intermittently since 1928 and her cardiac condition had shown little or no retrogression. She occasionally became short of breath on exertion with slight œdema of the ankles and congestion of the lung bases, but these symptoms were rapidly relieved, as on her first visit, by small tonic doses of digitalis. She had never had to rest, and while taking digitalis had not altered her usual mode of living.

The following points of interest were briefly discussed:

1. The value of small tonic doses of digitalis in slight cardiac œdema, even in the absence of auricular fibrillation.
2. The long interval between the attack of rheumatic fever and the development of symptoms, indicating a mild and only slowly progressive lesion.
3. The absence of retrogression while the patient was under observation for a period of six years.
4. The rarity of typical mitral stenosis in a patient aged sixty-eight.
5. The comparatively slight effect on the efficiency of the heart of a fairly marked mitral stenosis, provided the myocardium had not been much involved, as evidenced in this case by the absence of cardiac enlargement and a fairly good response to effort.

In contrast to the previous case, Dr. Hurley also presented a male, aged forty-two, who had been admitted to the out-patient department on January 16, 1934. He had had rheumatic fever at the age of fourteen. Ever since then he had had some shortness of breath on exertion, which had been much worse in the past three years. Two years ago he had been an in-patient at a country hospital for several months suffering from marked shortness of breath and considerable œdema. He had also noticed a dull pain in the precordial region, definitely induced by exertion and relieved by rest. The cardiac apex was in the sixth intercostal space, 13·75 centimetres (five and a half inches) from the mid-line, and there was two fingers' breadth of right heart dulness. Presystolic, systolic and diastolic murmurs were present at the apex. There were numerous extrasystoles, but no fibrillation. In the early development of symptoms, their more rapid progression, and the marked cardiac enlargement this patient presented a marked contrast to the previous one.

These cases were used to illustrate the main guiding principles in giving a prognosis in rheumatic heart disease, namely:

1. The time of onset of symptoms with reference to the original attack of rheumatic fever.
2. The degree of cardiac damage as estimated mainly by the size of the heart and the response to effort.
3. The progress under observation.

Aneurysm of the Aorta.

Dr. Hurley's next patient was a male, aged fifty-six years, who had been admitted to the out-patient department on March 2, 1934. He had had gonorrhœa and syphilis thirty years ago. For the past few months he had noticed severe pain in the precordial region, extending down the inner side of the left arm and forearm to the wrist. The pain often occurred when he was at rest and was partly relieved by exertion. He was still doing fairly hard labouring work without distress or shortness of breath. The cardiac apex was in the fifth intercostal space, 10·0 centimetres (four inches) from the mid-line. There was a large area of heaving pulsation over the *manubrium sterni*, for about 7·5 centimetres (three inches) to the left of it, and also slightly to the right, and over the same area there was dulness to percussion. There was a to-and-fro murmur at the aortic area. There was a well marked tracheal tug. The liver was palpable two fingers' breadth below the costal margin. The blood gave a strongly positive reaction to the Wassermann test.

X ray examination revealed the heart shadow not appreciably enlarged. There was marked widening of the aortic shadow to the left and anteriorly and posteriorly.

After a few weeks' treatment on iodides and mercury the pain had completely disappeared. A course of arsenobenzol, commencing with a dose of 0·15 gramme and with gradual increases, was about to be commenced.

The following points of interest were briefly discussed:

1. The rapid relief of the pain with iodides and mercury.
2. The absence of cardiac enlargement and symptoms of myocardial weakness despite the marked aortic disease.
3. Although the pain was of typical anginal distribution, yet from its associations it was almost certainly a pressure pain.

The subsequent treatment and the importance of early recognition of syphilitic aortitis were also discussed.

Ewing's Sarcoma.

Dr. Hurley also presented a male, aged thirty years, who had been admitted to hospital as an in-patient on November 22, 1933. In the past twelve months he had had severe pain commencing in front of the right knee joint and extending up to the groin and down to the inner aspect of the leg. The pain was definitely increased by exertion and would last anything from a few minutes to a day, and was followed by a feeling of soreness. Apart from the pain he had felt well and had no other symptoms.

On examination there was a slightly tender fusiform swelling occupying the region of the upper third of the right femur. X ray examination revealed involvement of the upper 15 to 20 centimetres (six to eight inches) of the shaft of the femur with some bone destruction and lamination of the shaft. A diagnosis of Ewing's sarcoma was made. X ray examination of the lungs and a number of other bones failed to reveal any other lesion.

On December 6, 1933, when he was being moved for further X ray examination, a spontaneous fracture occurred in the upper third of the femur. The limb had been put up in a bent Thomas splint with extension, and deep X ray therapy was commenced. At the time of presentation there was definite evidence of union, both clinically and radiologically, and there was marked improvement in the affected area, the neoplastic area being smaller and more defined, with some evidence of repair.

The following points of interest were briefly discussed:

1. The root type of pain leading at first to investigation for a possible spinal tumour, the swelling of the femur having been overlooked.
2. The response to X ray therapy.

The various types of bone sarcoma were briefly described and discussed.

Dr. Hurley's last patient was a male, aged sixteen years, who had been admitted to hospital as an in-patient on February 20, 1934. In the past two months he had had a slight dry cough and had lost 2·7 kilograms (six pounds) in weight. Fourteen days ago he had noticed a severe continuous pain in the epigastric region which had persisted for three days. During this period he had vomited several times. Ten days before admission his legs began to get stiff and he had some difficulty in walking. Eight days ago he had fallen down while attempting to do his work and had been admitted to a country hospital, where it had been found that there was some spastic weakness of the lower limbs, but no sensory loss. Three days before his admission to hospital the spastic weakness had become more marked and there was some diminution to pinprick and cotton wool touch in the feet and legs.

On his admission to hospital there was complete loss of power in both lower limbs, which were flaccid. The deep reflexes were present, the superficial abdominal reflexes absent, and the plantar reflexes extensor in type. There was complete loss to all forms of sensation up to

the level of the xiphisternum. The bladder was distended with overflow incontinence. The cerebro-spinal fluid was pale yellow in colour and showed a slight coagulum; the globulin was much increased and it contained 400 red cells per cubic millimetre. It failed to react to the Wassermann test.

X ray examination at the upper level of the lesion showed that the sixth rib had an extensive patchy absorption involving practically its whole length, except for about 2·5 centimetres (one inch) of the vertebral end. There was a slight apparent expansion in parts, with slight new bone formation. In the lung field there was a mass with its centre corresponding with the position of the rib, with maximum involvement medially and posteriorly. In the middle of the right lung there was an ill-defined area of dulness. The condition was regarded as Ewing's sarcoma.

Deep X ray therapy had been commenced and on April 26, 1934, further X ray examination showed that the intrathoracic mass had disappeared. There was better definition of the affected portion of the rib with a little repair.

Despite the improvement in the lung lesion and the rib, there had been practically no improvement in the neurological signs. There was still complete paralysis of the lower limbs and bladder, but now there was marked spasticity with flexor spasms.

(To be continued.)

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Macourt, Alice Margaret, M.B., 1931 (Univ. Sydney), 91, Shirley Road, Wollstonecraft.

Meyers, Edwin Solomon Alexander, M.B., B.S., 1934 (Univ. Sydney), Nimbin.

The undermentioned has been elected a member of the Victorian Branch of the British Medical Association:

Mancy, Ernest Henry Strugnell, M.B., B.S., 1930 (Univ. Melbourne), Henty, New South Wales.

Correspondence.

A CORRECTION.

SIR: May I make a correction in your report of the last local Branch meeting. I am reported to have said that "the ideal treatment of such a condition [that is, anal cancer] would include the application of deep X rays to the part before and after operation".

What I suggested was a preliminary application of radium, and operation in four or five weeks, to be followed, if possible, by deep X ray therapy.

Yours, etc.,

E. BRETTINGHAM MOORE.

154, Macquarie Street,
Hobart,
June 28, 1934.

CHRONIC NEPHRITIS AND LEAD POISONING.

SIR: In a letter of mine published in THE MEDICAL JOURNAL OF AUSTRALIA of April 28, 1934, the following appeared:

> Only a few weeks ago I saw a boy, aged three and a half years, totally and irrevocably blinded, and still manifesting signs of lead poisoning. This child was seen and examined by responsible medical men from north Queensland to Sydney.

Apparently this paragraph has been misinterpreted, my intention being to convey that the medical men concerned would verify the diagnosis and hence support the case and add weight to the cause.

I sincerely trust that it was not generally inferred that the gentlemen concerned had missed the diagnosis; in reality they all had concurred.

Yours, etc.,

R. H. VON DER BORCH,
Chief Medical Officer, Mount Isa Mines, Limited.

Mount Isa,
Queensland,
June 28, 1934.

Obituary.

JOHN ALLAN.

WE regret to announce the death of Dr. John Allan, which occurred on July 7, 1934, at North Sydney, New South Wales.

Books Received.

CLEFT PALATE SPEECH, WITH AN APPENDIX ON KINDRED DISORDERS, by J. H. Van Thal; 1934. London: Allen and Unwin, Limited. Crown 8vo., pp. 96. Price: 3s. net.

GOD—OR NO GOD? (A RATIONALIST LOOKS AT LIFE), by H. D. Everington, M.B., M.R.C.S., L.R.C.P.; 1934. London: Williams and Norgate. Foolscap 8vo., pp. 103. Price: 2s. 6d. net.

NEW INTRODUCTORY LECTURES ON PSYCHO-ANALYSIS, by S. Freud, M.D., LL.D.; Authorized Translation by W. J. H. Sprott; 1933. London: The Hogarth Press; Australia: Angus and Robertson. Demy 8vo., pp. 253. Price: 16s. net.

CARTESIO, by Francesco Olgiati; 1934. Milan: Società Editrice "Vita e Pensiero". Super Royal 8vo., pp. 341.

DA GUGLIELMO D'AUVERGNE A SAN TOMASO D'AQUINO, by Amato Masnovo; Volume II; 1934. Milan: Società Editrice "Vita es Pensiero". Super Royal 8vo., pp. 210.

AN INTRODUCTION TO PRACTICAL BACTERIOLOGY: A GUIDE TO BACTERIOLOGICAL LABORATORY WORK, by T. J. Mackie, M.D., D.P.H., and J. E. McCartney, M.D., D.Sc.; Fourth Edition; 1934. Edinburgh: E. and S. Livingstone. Crown 8vo., pp. 512.

DIET AND PHYSICAL FITNESS: A POPULAR TREATISE ON NUTRITION AS A MEANS TO GREATER EFFICIENCY, A FINER PHYSIQUE, BETTER HEALTH AND A LONGER LIFE, by G. Z. Dupain; 1934. Sydney: Briton Publications, Limited. Demy 8vo., pp. 403, with illustrations. Price: 20s. net.

BERGEY'S MANUAL OF DETERMINATIVE BACTERIOLOGY: A KEY FOR THE IDENTIFICATION OF ORGANISMS OF THE CLASS SCHIZOMYCETES, by D. H. Bergey, assisted by a committee of the Society of American Bacteriologists; Fourth Edition; 1934. London: Baillière, Tindall and Cox. Royal 8vo., pp. 680. Price: 27s. net.

THE SINGLE WOMAN: A MEDICAL STUDY IN SEX EDUCATION, by R. L. Dickinson and L. Beam; 1934. London: Baillière, Tindall and Cox. Demy 8vo., pp. 488. Price: 23s. net.

HEALTH-GIVING DISHES, compiled by B. Brupbacher-Bircher, with a foreword by F. Petty; 1934. London: Edward Arnold. Crown 8vo., pp. 255. Price: 6s. net.

PSYCHOPATHOLOGY: A SURVEY OF MODERN APPROACHES, by J. E. Nicole, L.M.S.S.A., D.P.M.R.C.P. and S., with foreword by W. H. B. Stoddart, M.D., B.S., F.R.C.P.; Second Edition; 1934. London: Baillière, Tindall and Cox. Demy 8vo., pp. 298. Price: 12s. 6d. net.

PSYCHOLOGY AND PSYCHOTHERAPY, by W. Brown, D.M., D.Sc., F.R.C.P.; Third Edition; 1934. London: Edward Arnold and Company. Demy 8vo., pp. 259. Price: 12s. 6d. net.

THE LIFE OF SIR ROBERT JONES, by F. Watson; 1934. London: Hodder and Stoughton. Royal 8vo., pp. 327, with plates. Price: 12s. 6d. net.

MIDWIFERY FOR NURSES, by H. R. Andrews, M.D., B.S., F.R.C.P., F.C.O.G., and V. Lack, M.B., B.S., M.R.C.P., F.R.C.S., M.C.O.G.; Seventh Edition; 1934. London: Edward Arnold. Crown 8vo., pp. 276, with illustrations: Price: 6s. net.

Diary for the Month.

JULY 17.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 17.—Tasmanian Branch, B.M.A.: Council.
JULY 18.—Western Australian Branch, B.M.A.: Branch.
JULY 19.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 26.—South Australian Branch, B.M.A.: Branch.
JULY 26.—Victorian Branch, B.M.A.: Council.
JULY 26.—New South Wales Branch, B.M.A.: Branch.
JULY 27.—Queensland Branch, B.M.A.: Council.
AUG. 1.—Western Australian Branch, B.M.A.: Council.
AUG. 2.—South Australian Branch, B.M.A.: Council.
AUG. 2.—Victorian Branch, B.M.A.: Clinical Meeting.
AUG. 3.—Queensland Branch, B.M.A.: Branch.
AUG. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 7.—Tasmanian Branch, B.M.A.: Council.
AUG. 8.—Victorian Branch, B.M.A.: Branch.
AUG. 10.—Queensland Branch, B.M.A.: Council.
AUG. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 14.—Tasmanian Branch, B.M.A.: Branch.

Medical Appointments.

Dr. T. C. Brown has been appointed Health Inspector by the Nungarin Road Board, Western Australia.

* * *

Dr. R. Dick (B.M.A.) has been appointed as Inspector of Schools of Anatomy for the State of New South Wales.

* * *

Dr. F. A. Maguire (B.M.A.) has been appointed Consultant Surgeon to the Radium Clinic, Coast Hospital, Office of the Director-General of Public Health, New South Wales.

* * *

Dr. R. H. Kenny (B.M.A.) has been appointed Government Medical Officer at Balranald, New South Wales.

* * *

Dr. L. A. Maclean (B.M.A.) has been appointed Junior Medical Officer at the Mental Diseases Hospital, New Norfolk, Tasmania.

* * *

The undermentioned have been appointed Members of the Adelaide Hospital Advisory Committee, Adelaide, South Australia, under the provisions of the *Hospitals Act Amendment Act*, 1921: Dr. F. S. Hone (B.M.A.), Dr. W. Ray (B.M.A.), Dr. E. A. Johnson (B.M.A.), Dr. C. T. Ch. de Crespigny (B.M.A.), and Dr. I. B. Jose (B.M.A.).

* * *

Dr. F. N. Le Messurier (B.M.A.) has been appointed a Member of the Advisory Committee of the Mareeba Babies' Hospital, South Australia.

* * *

Dr. F. J. Bryan (B.M.A.) has been appointed Certifying Medical Practitioner at Caulfield, Victoria, pursuant to the provisions of the *Workers' Compensation Act*, 1928.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," pages xvi, xvii and xviii.

AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA: Honorary Officers, Resident Medical Officer.

BRITISH MEDICAL ASSOCIATION, VICTORIAN BRANCH: Medical Secretary.

CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.

MATER MISERICORDIÆ CHILDREN'S HOSPITAL, BRISBANE, QUEENSLAND: Resident Medical Officer.

PERTH HOSPITAL, PERTH, WESTERN AUSTRALIA: Resident Medical Officers.

THE WOMEN'S HOSPITAL, CROWN STREET, SYDNEY, NEW SOUTH WALES: Resident Medical Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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